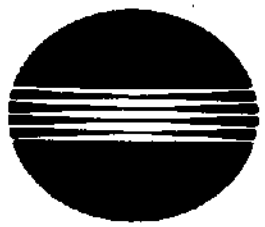
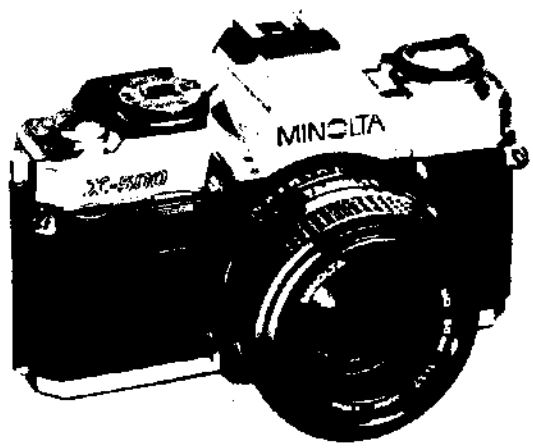
Service Manual

X-500	**CODE No. 2024-100/-200**
X-570	**CODE No. 2024-400**
X-300	**CODE No. 2025-100**
X-370	**CODE No. 2025-300**



MINOLTA

X-500 [2024-100, -200 (black)]
X-570 [2024-400 (black)]
……For U.S.A. & Canada



TYPE OF CAMERA

Electrically controlled 35 mm focal plane shutter SLR AE camera

Photography system : Aperture priority AE and manual photography

Standard lens : MD50mm F 1.2, MD50mm F 1.4, MD50mm F 1.7

Lens mount : Minolta SLR bayonet mount

Film used : J135 rolled film

Size of image field : 24 mm × 36 mm

SHUTTER

Electrically controlled focal plane shutter (Traveling holizontally)

Shutter speed : Auto···4 sec. to 1/1000 sec.
Manual···1, 1/2, 1/4, 1/8, 1/15, 1/30, 1/60, 1/125, 1/250, 1/500, 1/1000 sec. and B (bulb).

Shutter speed dial : Click stop endless dial (locked at "A" setting)

Shutter release : Electromagnetic release, remote cord, wireless controller IR-1 can be mounted.
Shutter release locks in case of battery voltage drop.
With main switch at ON.

Camera vibration warning :
Beeping sound is given as warning when the shutter speed becomes slower than 1/30 sec in A mode.

Self timer : Electronic self-timer starts by depressing the operating button.
Operation is indicated by camera-front LED blink and beeping sound for 10 sec. with the main switch set at ON.
Shutter release notice is given.
Self-timer operation can be canceled anytime before release.

EXPOSURE CONTROL

Light metering system : TTL center-weighted average metering (Minolta direct metering, using exclusive auto electro-flash)

Receiver element : 2 Silicon photocells

Auto exposure interlock range
: EV 1-18 (ASA/ISO 100 F 1.4 lens)

Film speed scale : ASA/ISO 12-3200 (locked every 1/3 step)

AE lock : Only for A mode.
: Operation by pushing self-timer lever down.
: It can be used to obtain slow-shutter sync with exclusive flash used.

Metering switch : By touch switch or depressing of operating button slightly. Memorizing of metering and finder LED indication for 15 sec. after the switch OFF.

VIEW FINDER

Type : SLR pentaprism type

Focusing screen : Center···Split-image and micro-prism
Periphery···Acute Matte

Viewfinder showing : 95% of 24 mm × 36 mm film-frame area

Magnification : 0.9× (using 50 mm lens at ∞ setting)

Dioptric power : −1 diop.

Finder indication :
: Mode indication in use (A, M)
: Shutter speed scale with LED indication
: Slow shutter speed indication for 1-4 sec (▽)
: Over-/under- range LED indication blinking at 4 Hz (△/▽)
: B-setting indicator (✱)
: Aperture setting (through the optical finder block)
: Setting shutter speed indicator (Shutter speed LED blinking at 4 Hz)
: Flash-ready signal (LED next to "60" blinking at 2 Hz)
: FDC signal (LED next to "60" blinking at 2 Hz)
: Battery check (by mode indication: Indicator ON when batteries are serviceable; blinking when near exhaustion; no LEDs light when exhausted)

Mirror : Slide-up quick return

FLASH SYNC

Sync speed : X contact, electroflash is synchronized at speeds lower than 1/60 sec; flash bulb is at speeds lower than 1/15 sec.
In A mode controlled by TTL metering.
Slow-shutter sync by using AE lock to cancel auto switching to 1/60 sec.
In M mode, controlled to 1/60 sec. (except for "B" setting) and flash fires manually. (When "B" setting, used for bulb, flash fires manually)

Hot shoe : Direct contact (With electric shock prevention device), sync auto control contact

Sync terminal : JIS B type socket

FILM WINDING, REWINDING

Film winding : By lever. Winding at an angle of 130° (preliminary angle: 30°)
: Auto winding by Motor Drive 1 or Auto Winder
: With Safe Load Signal

Film counter : Auto resetting calculation. With Safe Load Signal

Film rewinding : By rewind button and crank system; auto reset of rewind button.

BACK COVER

Opening/Closing by pulling up knob, snapping back the cover.
With grip, memo holder (ISO, DIN, ASA table)
Possible to attach/detach

POWER

Two 1.5 V alkaline-manganese (LR44: Eveready A-76 or equiv.) or two 1.55 V silver-oxide (SR44: Eveready G-13 or equiv.)

OTHERS

Preview button, Battery holder and Eyepiece cap

SIZE AND WEIGHT

51.5×89×137 mm (2×3-1/2×5-3/8 in.)
485 g (17-13/16 oz.) without power cells

EXCLUSIVE ACCESSORIES

Flash : Auto Electroflash 280PX
Winder, drive : Motor Drive 1, Auto Winder G
Data Back : Multi-Function Back, Quartz Data Back 1
Remote control : Wireless Controller IR-1, Remote Cord S/L

■ Following table shows exclusive parts for X-500 Black model (2024-200) and X-570 Black model (2024-400). The other parts than the following, refer to Service Manual for X-500 chrome model (2024-100). The difference between 2024-200 and 2024-400 is only the top cover.

■ ここに記載されている内容は、X−500 Black model (2024−200), X−570 Black model (2024−400) 専用部品をまとめたリストです。 この内容以外は、X−500 Chrome model (2024−100) のサービスマニュアルを参照して下さい。 尚、2024−200と2024−400の違いは上カバーのみです。

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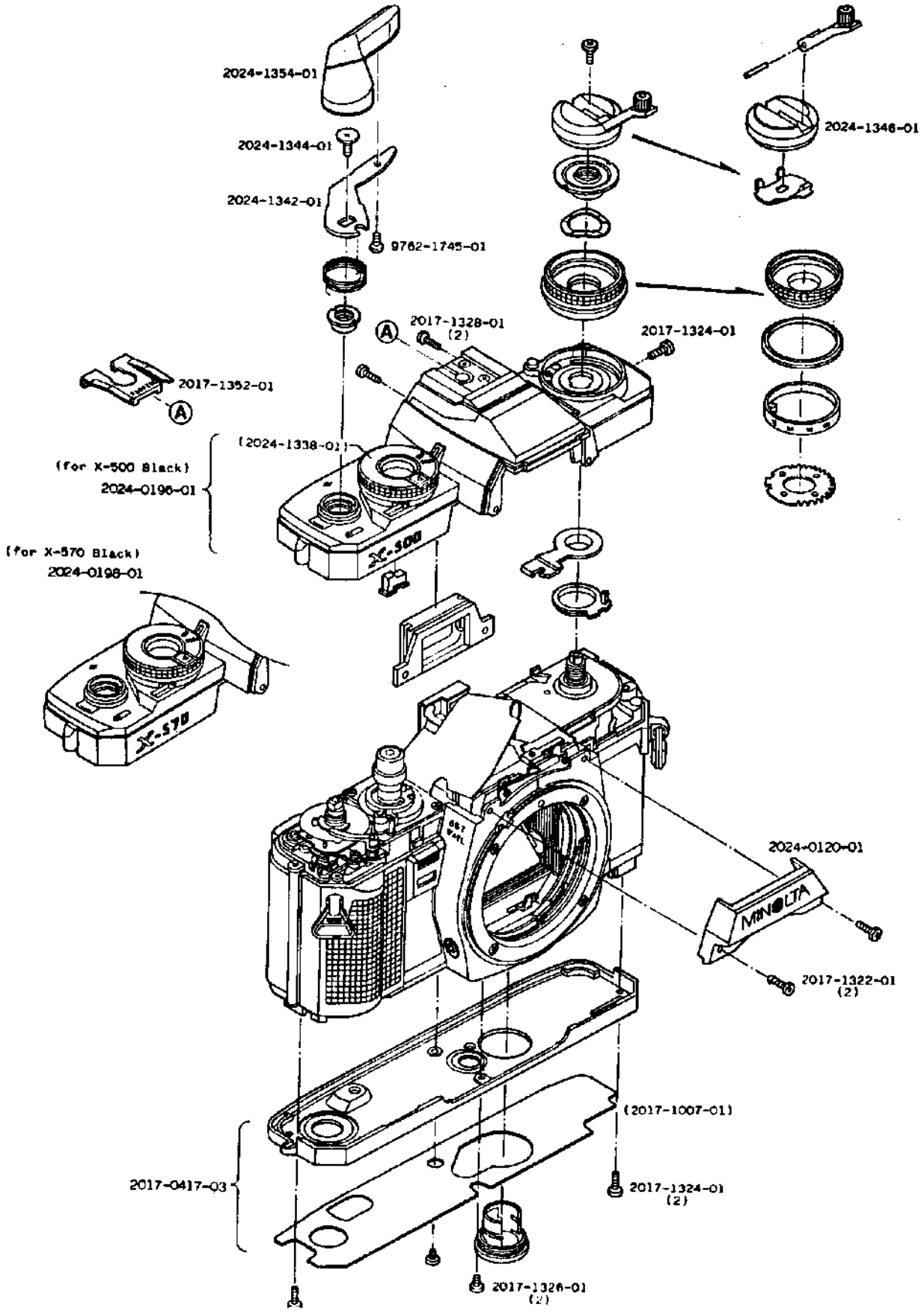
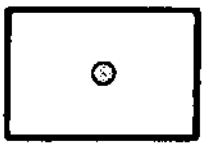
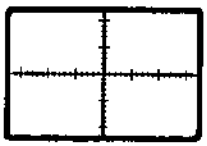
2024-1346	1		
2017-1352	1		
2024-1354	1		

X-500 (Black model) **CODE No. 2024-200**
X-570 (Black model) **CODE No. 2024-400**



Part No.	Part Name		Qty
2024-0120-01	Front top cover set	上部正面カバーセット	1
2024-0196-01	Top cover set (for X-500 Black)	上カバーセット	1
2024-0198-01	Top cover set (for X-570 Black)	上カバーセット	
(2024-1338-01)	Shutter dial plate	シャッターダイヤル銘板	1
2017-0417-03	Bottom cover set	下カバーセット	1
(2017-1007-01)	Bottom cover sheet	下カバー保護シート	1
2017-1322-01	Screw	止めねじ	2
2017-1324-01	Screw	止めねじ	3
2017-1326-01	Screw	止めねじ	2
2017-1328-01	Screw	止めねじ	2
2024-1342-01	Film advance lever	巻上レバー	1
2024-1344-01	Winding lever pressure	巻上レバー押えビス	1
2024-1346-01	Rewinding knob	巻戻しノブ	1
2017-1352-01	Accessory shoe spring	アクセサリーシューバネ	1
2024-1354-01	Film advance lever knob	巻上レバー指当て	1
9762-1745-01	Tap tite screw	十字穴付なべ頭タップタイトねじ	1

INTERCHANGEABLE FOCUSING SCREENS FOR MINOLTA X-700, X-500 & X-570

	Part No.	Part Name	
	2017-5851-01	Focusing screen Type P1	焦点板 P1型
	2017-5852-02	Focusing screen Type P2	焦点板 P2型
	2017-5853-01	Focusing screen Type Pd	焦点板 Pd型
	2017-5854-01	Focusing screen Type M	焦点板 M型
	2017-5855-01	Focusing screen Type G	焦点板 G型
	2017-5856-02	Focusing screen Type S	焦点板 S型
	2017-5857-01	Focusing screen Type L	焦点板 L型
	2017-5858-02	Focusing screen Type H	焦点板 H型

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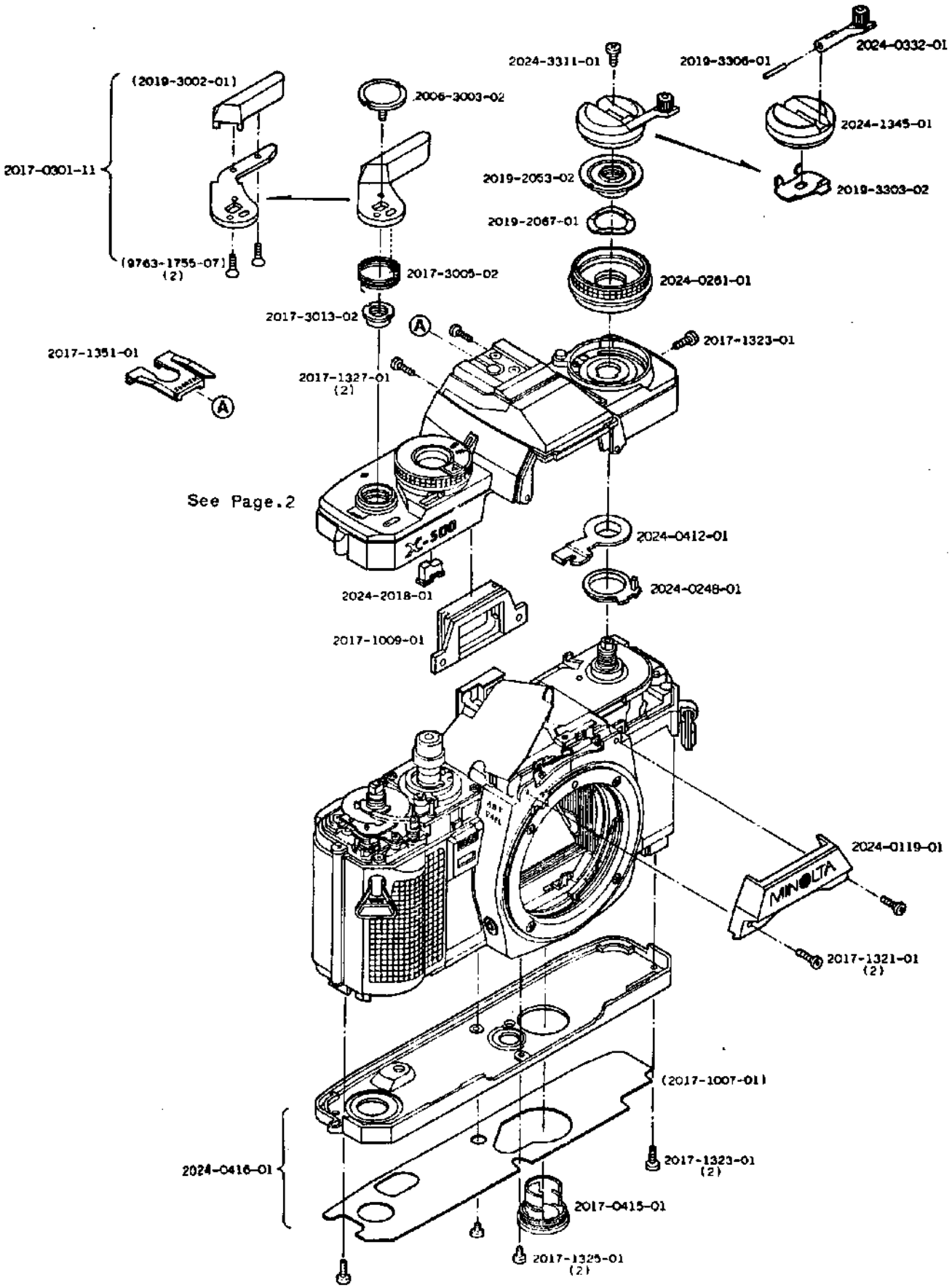
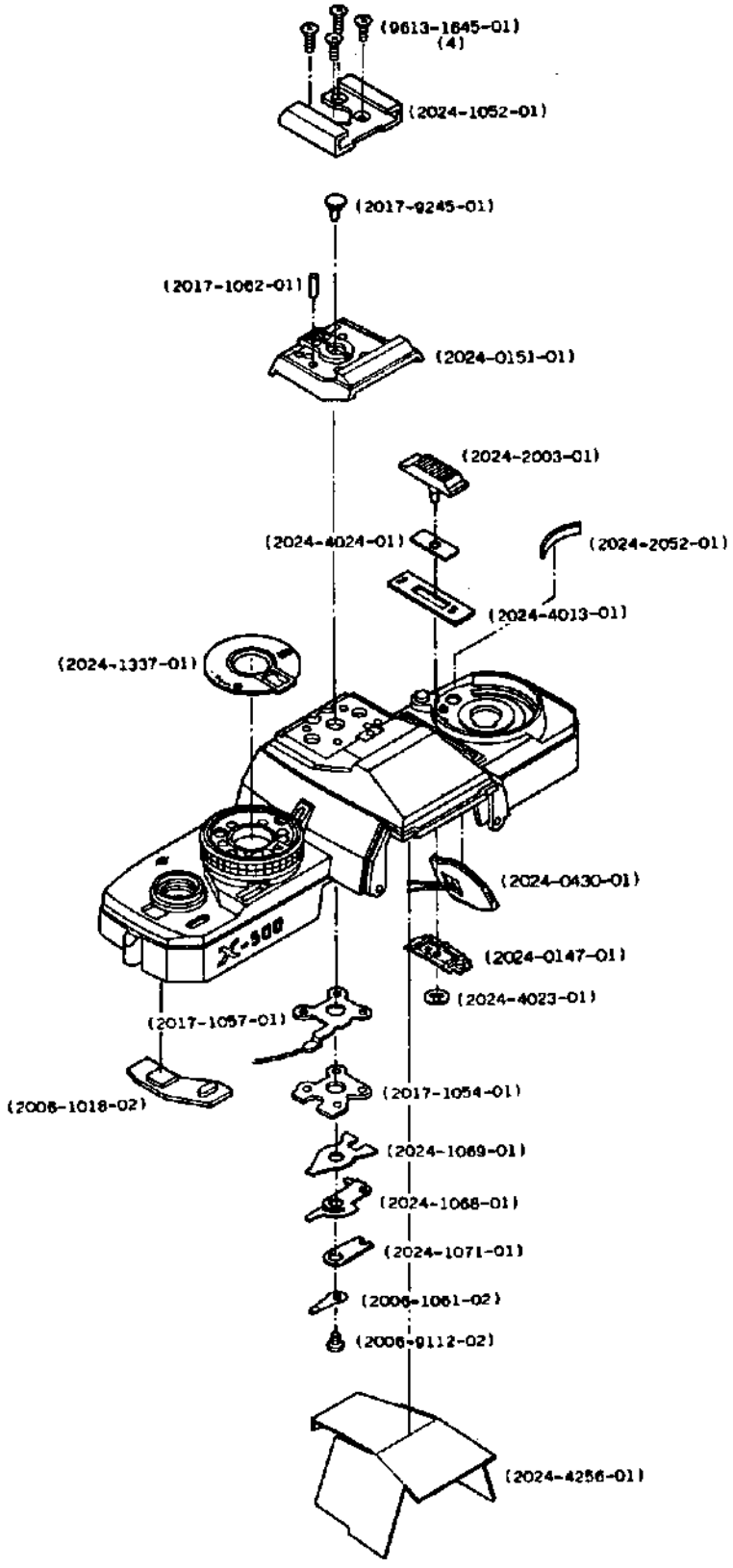
X-500 (Chrome model) CODE No. 2024-100



Part No.	Part Name		Qty
2024-0119-01	Front top cover set	上部正面カバーセット	1
2024-0248-01	ASA contact holder set	ASA ブラシホルダーセット	1
2024-0261-01	ASA operation knob set	ASA 操作ノブセット	1
2017-0301-11	Film advance lever set	巻上レバーセット	1
(2019-3002-01)	Film advance lever knob	巻上レバー指当て	1
(9763-1755-07)	Tap tite screw	十字穴付皿頭タップタイトねじ	2
2024-0332-01	Rewinding handle set	巻戻しハンドルセット	1
2024-0412-01	Main switch guide plate set	メインスイッチガイド板セット	1
2017-0415-01	Battery holder set	電池ケース蓋セット	1
2024-0416-01	Bottom cover set	下カバーセット	1
(2017-1007-01)	Bottom cover sheet	下カバー保護シート	1
2017-1009-01	Eye-piece frame	接眼枠	1
2017-1321-01	Screw	止めねじ	2
2017-1323-01	Screw	止めねじ	3
2017-1325-01	Screw	止めねじ	2
2017-1327-01	Screw	止めねじ	2
2024-1345-01	Rewinding knob	巻戻しノブ	1
2017-1351-01	Accessory shoe spring	アクセサリーシューバネ	1
2024-2018-01	Auto lock button	オートロック釦	1
2019-2053-02	ASA dial nut	ASA 押えナット	1
2019-2067-01	Pressure spring	ASA 操作リング押えばね	1
2006-3003-02	Winding lever pressure	巻上レバー押え	1
2017-3005-02	Film advance lever spring	巻上レバー戻しSP	1
2017-3013-02	Top cover nut	上カバー止めナット	1
2019-3303-02	Rewinding handle spring	巻戻しハンドルばね	1
2019-3306-01	Rewinding handle axis	巻戻しハンドル軸	1
2024-3311-01	Rewinding handle screw	巻戻しノブビス	1

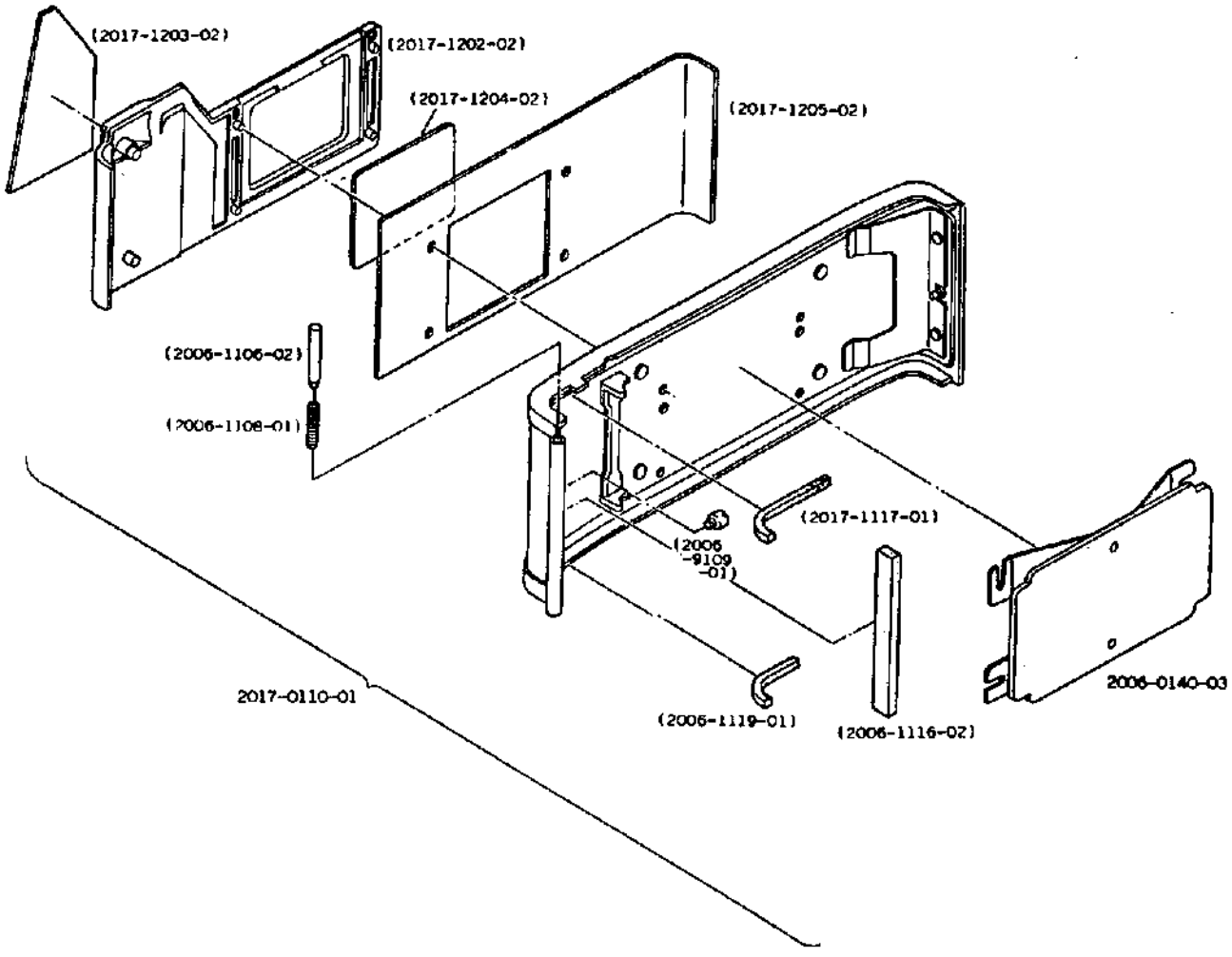
X-500 (Chrome model) CODE No. 2024-100

Assy Part No.2024-0195-01



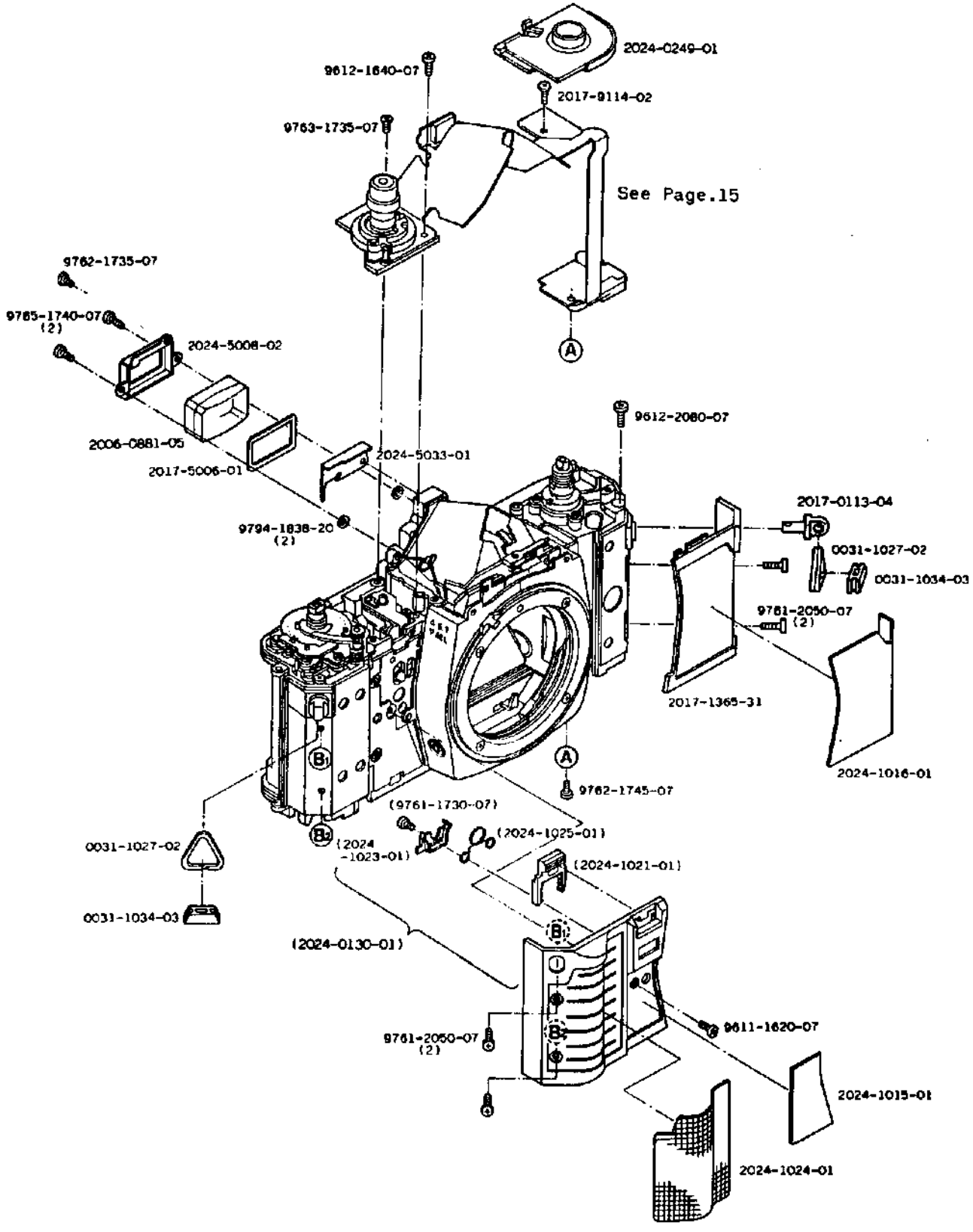
Part No.	Part Name		Qty
2024-0195-01	Top cover set (for X-500)	上カバーセット	1
(2024-0151-01)	Accessory shoe base set	アクセサリーシュー座セット	1
(2024-0430-01)	Piezo buzzer set	圧電ブザーセット	1
(2006-1018-02)	Counter window	カウンター窓	1
(2024-1052-01)	Accessory shoe	アクセサリーシュー	1
(2017-1054-01)	Accessory shoe set plate	アクセサリーシュー取付板	1
(2017-1057-01)	Contact-C	コンタクト接片C	1
(2006-1061-02)	Contact-D	コンタクト接片D	1
(2017-1062-01)	Contact operation pin	コンタクト接片連動ピン	1
(2024-1068-01)	Contact-E	コンタクト接片E	1
(2024-1069-01)	Contact isolation sheet	コンタクト接片絶縁シート	1
(2024-1071-01)	Contact isolation plate	コンタクト接片絶縁板	1
(2024-1337-01)	Shutter dial plate	シャッターダイヤル銘板	1
(2024-2003-01)	Main switch	メインスイッチ切換レバー	1
(2024-2052-01)	ASA window	ASA 窓	1
(2024-4013-01)	Main switch plate	メインSW銘板	1
(2024-0147-01)	Click plate set	メインSWクリックバネセット	1
(2024-4023-01)	Snaping ring	メインSW止め輪	1
(2024-4024-01)	Main switch sheet	メインSWレバーシート	1
(2024-4256-01)	Top-cover isolation sheet	上カバー絶縁シート	1
(2006-9112-02)	Screw	止めねじ	1
(2017-9245-01)	Contact-A	コンタクト接点A	1
(9613-1645-01)	Phillips type screw	十字穴付半丸皿頭小ねじ	4

X-500 (Chrome model) CODE No. 2024-100



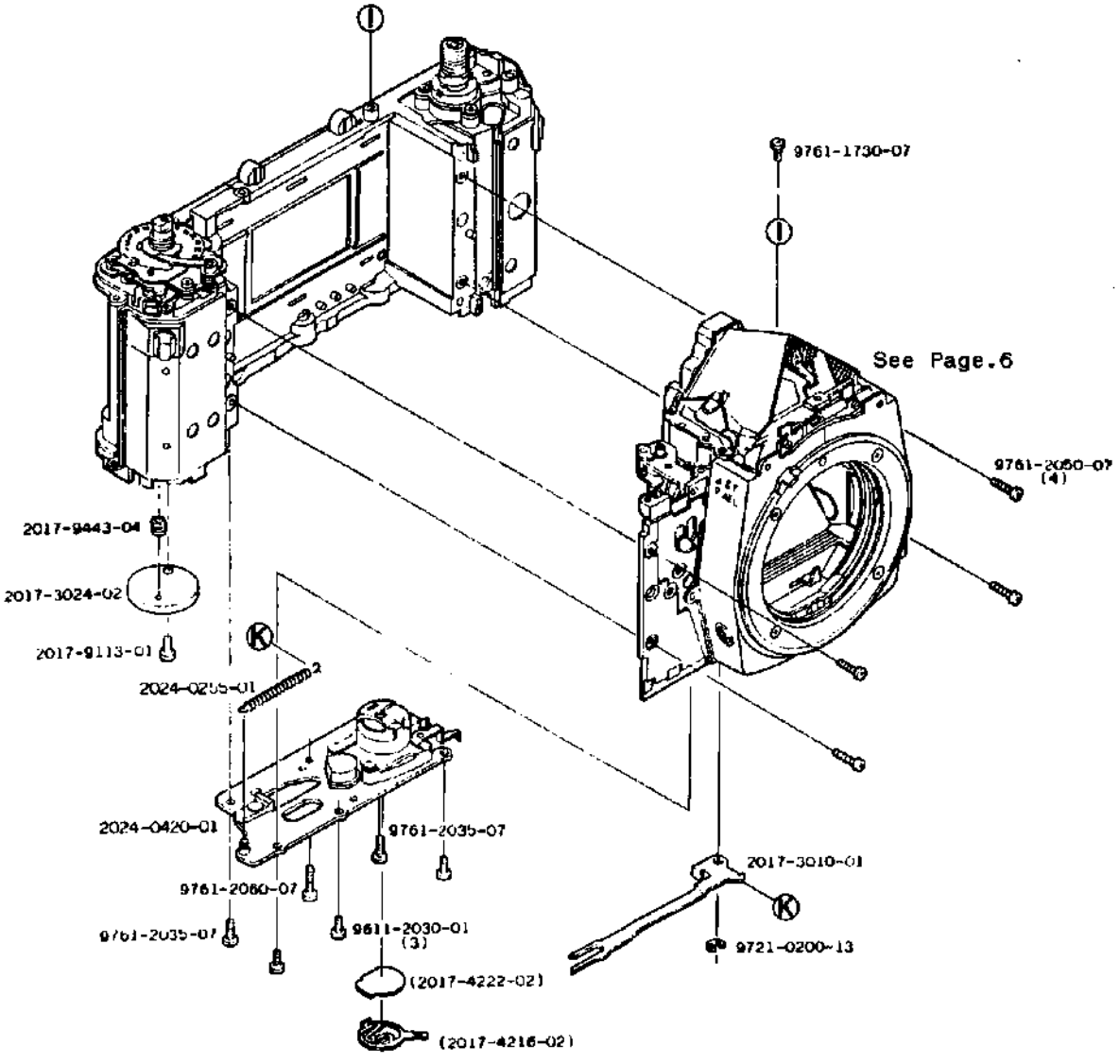
Part No.	Part Name		Qty
2017-0110-01	Back cover set	裏蓋セット	1
(2006-1106-02)	Hinge axis-A	ヒンジ軸 A	1
(2006-1108-01)	Hinge spring	ヒンジスプリング	1
(2006-1116-02)	Back cover light shield plate	裏蓋遮光片	1
(2017-1117-01)	Back cover light shield plate-C	裏蓋遮光片	1
(2006-1119-01)	Back cover light shield plate-B	裏蓋遮光片 B	1
(2017-1202-02)	Back cover grip	裏蓋グリップ	1
(2017-1203-02)	Back cover grip leather	裏蓋グリップ貼皮	1
(2017-1204-02)	Conversion scale	フイルム感度換算板	1
(2017-1205-02)	Back cover leather	裏蓋貼皮	1
(2006-9109-01)	Hinge axis-A screw	裏蓋ヒンジ軸止めビス	1
2006-0140-03	Pressure plate set	圧着板セット	1

X-500 (Chrome model) CODE No. 2024-100



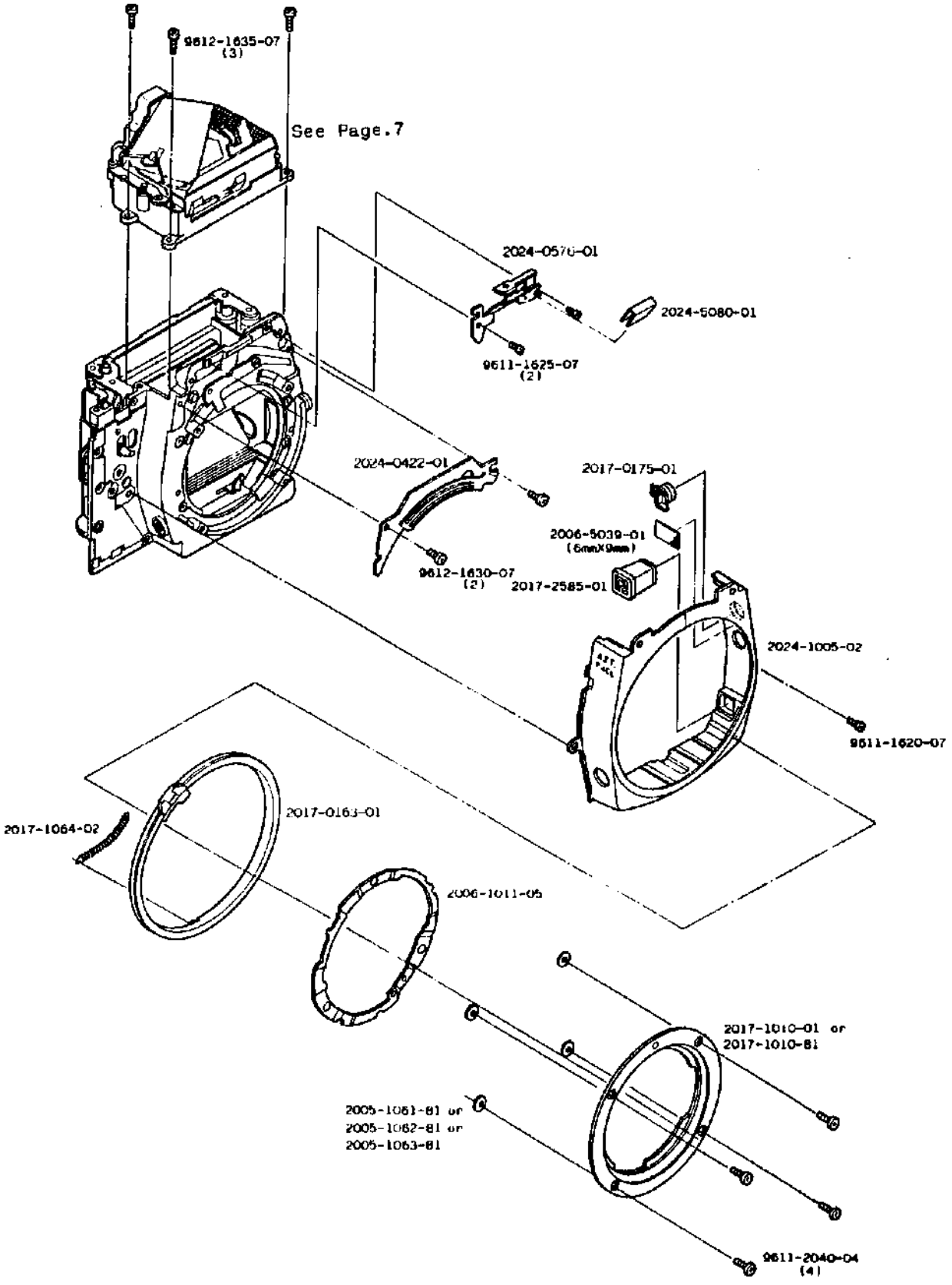
Part No.	Part Name		Qty
2017-0113-04	Strap hanger set	吊環セット	1
2024-0130-01	Side cover-A set	サイドカバーAセット	1
(2024-1021-01)	Self-timer lever	セルフレバー	1
(2024-1023-01)	Click spring	セルフクリックばね	1
(2024-1025-01)	Self-timer lever spring	セルフレバーSP	1
(9761-1730-07)	Tap tite screw	十字穴付なべ頭タップタイトねじ	1
2024-0249-01	ASA resistor set	ASA 抵抗体セット	1
2006-0881-05	Eye-piece lens set	接眼レンズセット	1
2024-1015-01	Right side leather	右貼皮	1
2024-1016-01	Left side leather	左貼皮	1
2024-1024-01	Grip leather	グリップ貼皮	1
0031-1027-02	Triangle hanger	三角吊環	2
0031-1034-03	Triangle hanger stopper	三角環回り止め	2
2017-1365-31	Side cover-B	サイドカバーB	1
2017-5006-01	Eye-piece light shield plate	接眼レンズ遮光枠	1
2024-5008-02	Eye-piece pressure	接眼レンズ押え	1
2024-5033-01	Shield plate	シールド板 A	1
2017-9114-02	Screw	止めねじ	1
9611-1620-07	Phillips type screw	十字穴付なべ頭小ねじ	1
9612-1640-07	Phillips type screw	十字穴付なべ頭小ねじ	1
9612-2080-07	Phillips type screw	十字穴付なべ頭小ねじ	1
9761-2050-07	Tap tite screw	十字穴付なべ頭タップタイトねじ	4
9762-1735-07	Tap tite screw	十字穴付なべ頭タップタイトねじ	1
9762-1745-07	Tap tite screw	十字穴付なべ頭タップタイトねじ	1
9763-1735-07	Tap tite screw	十字穴付半丸皿頭タップタイトねじ	1
9765-1740-07	Tap tite screw	十字穴付皿頭タップタイトねじ	2
9794-1838-20	Washer	薄ワッシャー	2

X-500 (Chrome model) CODE No. 2024-100



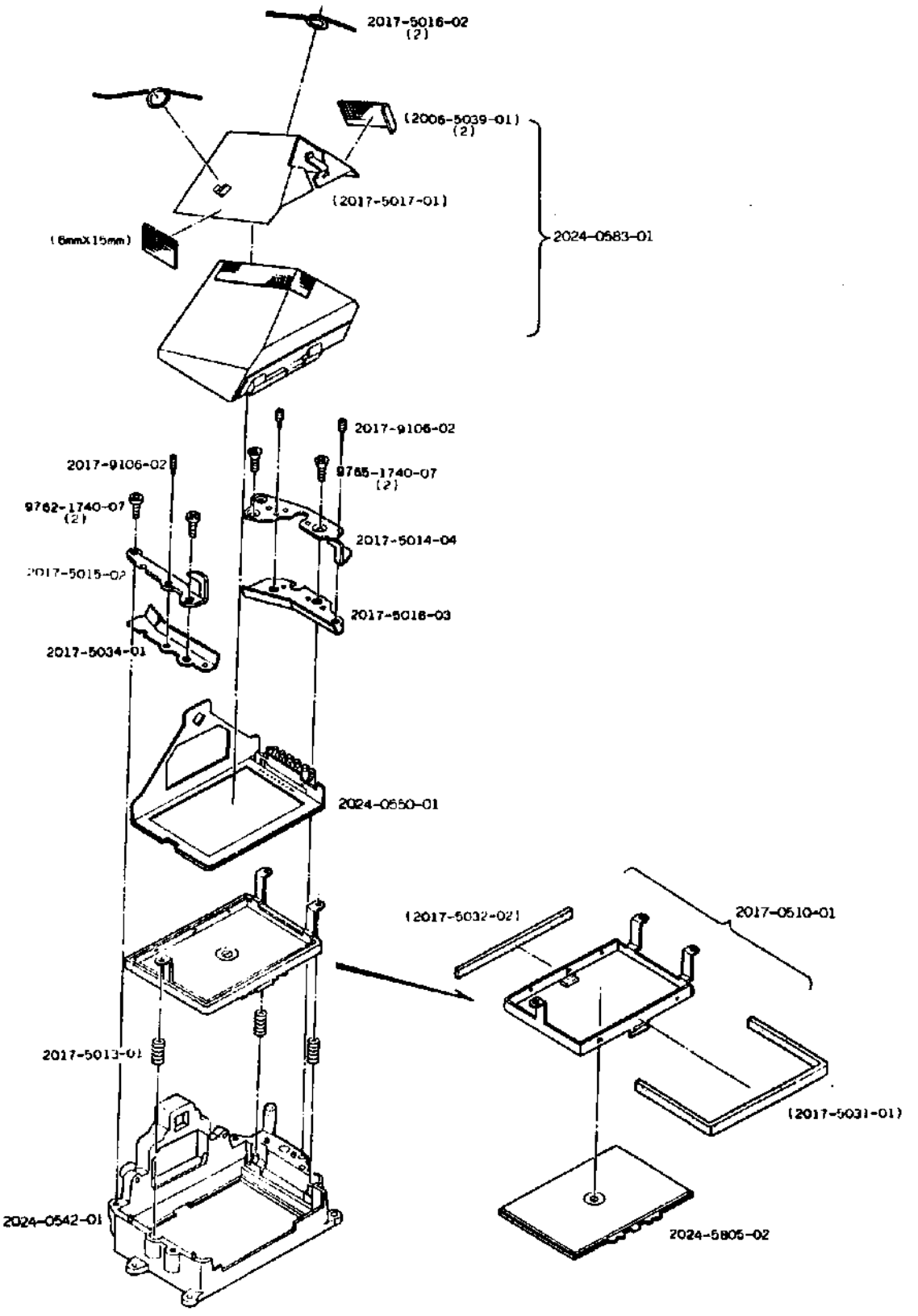
Part No.	Part Name		Qty
2024-0255-01	MP return sub spring-B set	MP戻し補助SP-Bセット	1
2024-0420-01	Battery case base plate set	電池ケース台板セット	1
(2017-4216-02)	Battery contact (+)	電池接片 (+)	1
(2017-4222-02)	Battery light shield plate	電池ケース遮光板	1
2017-3010-01	Charge lever	チャージレバー	1
2017-3024-02	Winder coupler	ワインダーカプラー	1
2017-9113-01	Screw	止めねじ	1
2017-9443-04	Charge lever roller	チャージレバーローラー	1
9611-2030-01	Phillips type screw	十字穴付なべ頭小ねじ	3
9761-1730-07	Tap tite screw	十字穴付なべ頭タップタイトねじ	1
9761-2035-07	Tap tite screw	十字穴付なべ頭タップタイトねじ	2
9761-2050-07	Tap tite screw	十字穴付なべ頭タップタイトねじ	4
9761-2060-07	Tap tite screw	十字穴付なべ頭タップタイトねじ	1
9721-0200-13	E-ring	E リング	1

X-500 (Chrome model) CODE No. 2024-100



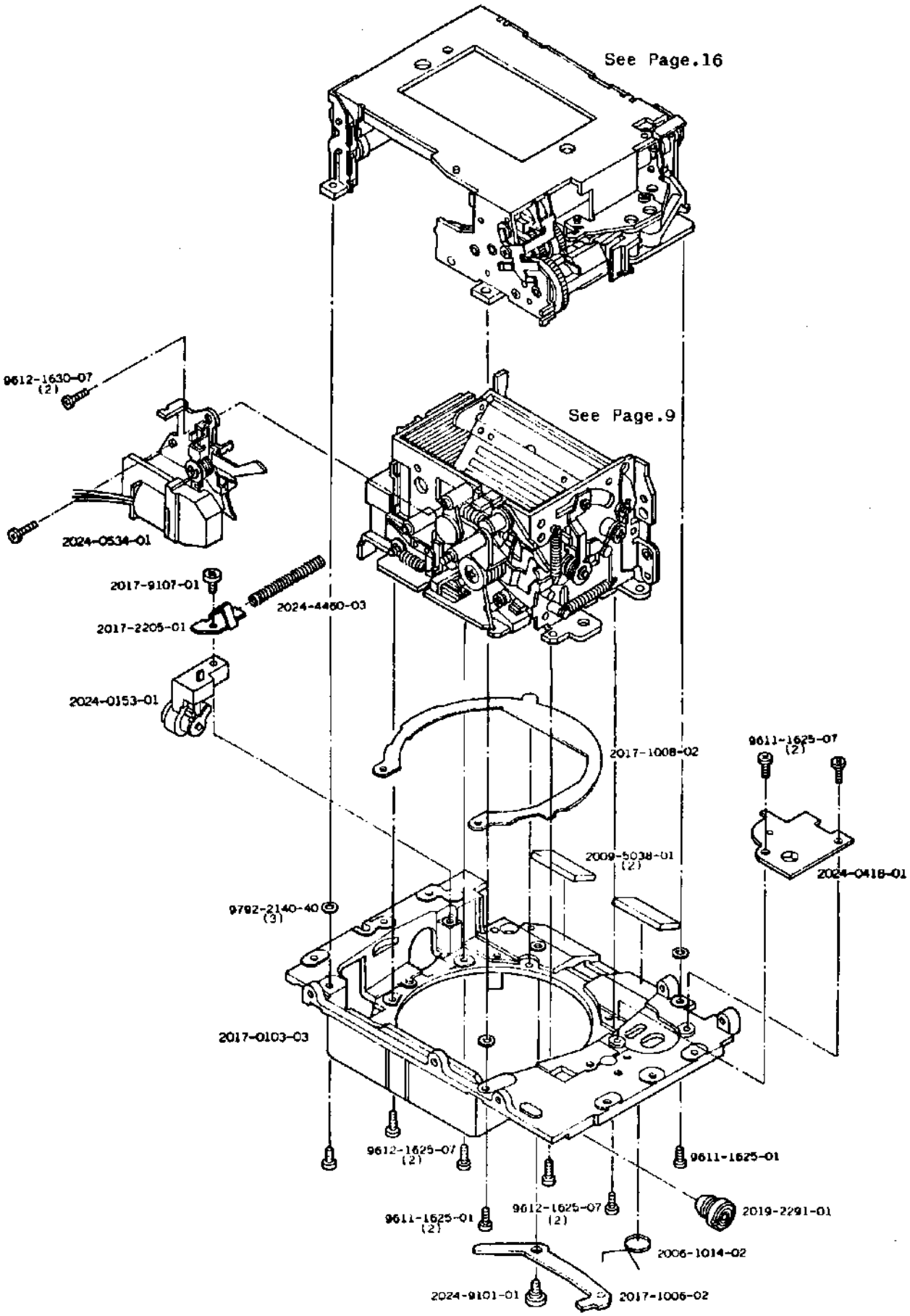
Part No.	Part Name		Qty
2017-0163-01	Aperture coupling ring set	連結リングセット	1
2017-0175-01	Lens lock button set	レンズロック釦セット	1
2024-0422-01	AV resistor plate set	AV 基板セット	1
2024-0576-01	In-finder base plate set	インファインダー台板セット	1
2024-1005-02	Front cover	前カバー	1
2017-1010-01	Bayonet lens mount	バヨネット座板	1
2017-1010-81	Bayonet lens mount (-0.1mm)	バヨネット座板 (−0.1mm)	
2006-1011-05	Bayonet spring	バヨネットスプリング	1
2005-1061-81	Adjustment washer-A (0.02mm)	調整ワッシャーA	some 若干
2005-1062-81	Adjustment washer-B (0.5mm)	調整ワッシャーB	
2005-1063-81	Adjustment washer-C (0.1mm)	調整ワッシャーC	
2017-1064-02	Aperture coupling ring spring	連結リングSP	1
2017-2585-01	PV button	PV釦	1
2006-5039-01	Penta. pressure tape (per roll)	ペンタ押え板接着テープ	1
2024-5080-01	In-finder mask	インファインダーマスク	1
9611-1620-07	Phillips type screw	十字穴付なべ頭小ねじ	1
9611-1625-07	Phillips type screw	十字穴付なべ頭小ねじ	2
9611-2040-04	Phillips type screw	十字穴付なべ頭小ねじ	4
9612-1630-07	Phillips type screw	十字穴付なべ頭小ねじ	2
9612-1635-07	Phillips type screw	十字穴付なべ頭小ねじ	3

X-500 (Chrome model) CODE No. 2024-100



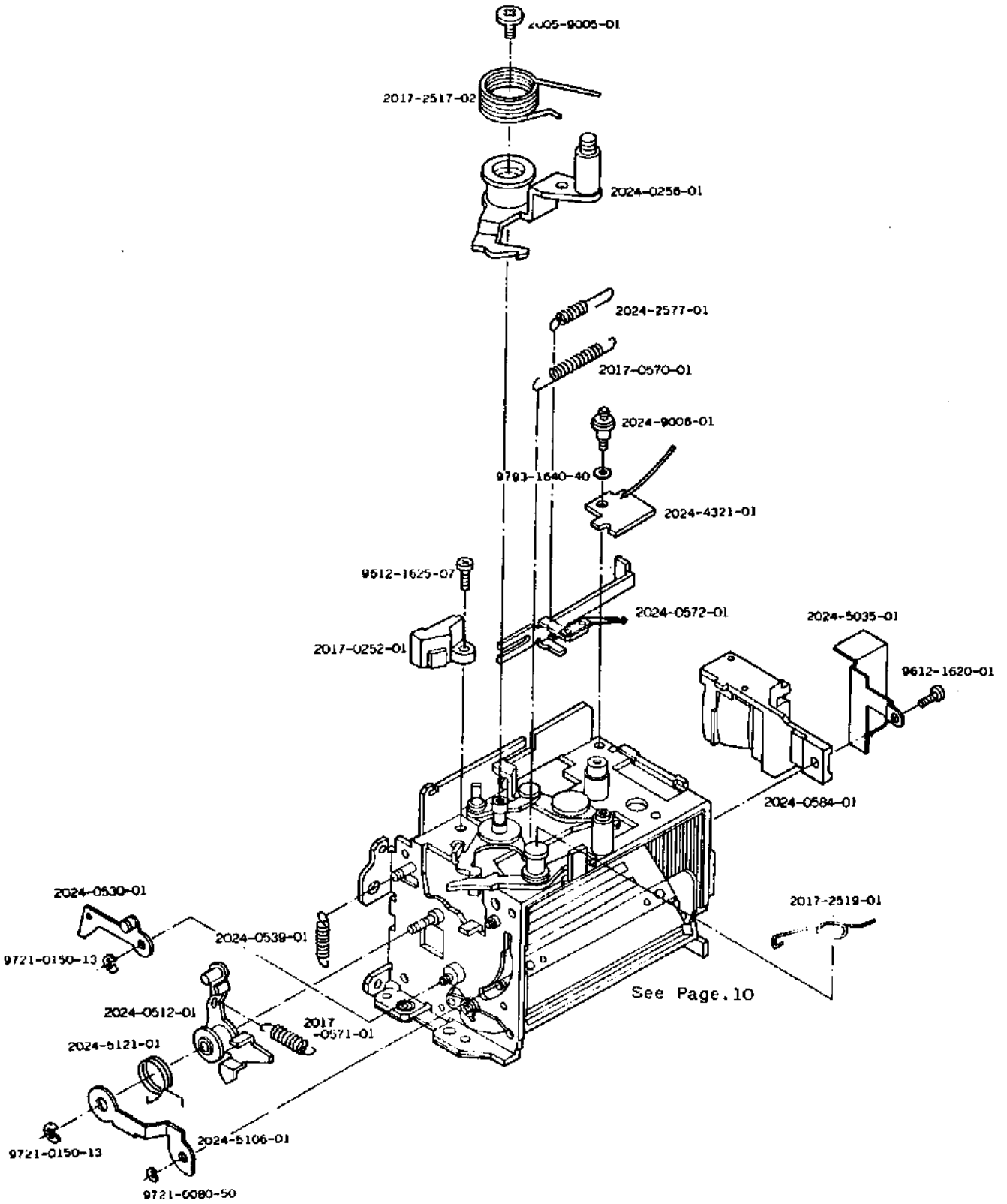
Part No.	Part Name		Qty
2017-0510-01	Fresnel lens holder set	焦点板ホルダーセット	1
(2017-5031-01)	Packing-A	防塵モルトプレンA	1
(2017-5032-02)	Packing-B	防塵モルトプレンB	1
2024-0542-01	Penta. holder set	ペンタホルダーセット	1
2024-0550-01	Penta. receiver set	ペンタ受付セット	1
2024-0583-01	Penta. prism set	ペンタプリズムセット	1
(2017-5017-01)	Penta. pressure plate	ペンタ押え板	1
(2006-5039-01)	Penta. pressure tape(per roll)	ペンタ押え板接着テープ	2
2017-5013-01	Fresnel lens holder spring	焦点板ホルダーSP	3
2017-5014-04	Penta. pressure (left side)	ペンタ押え板（左）	1
2017-5015-02	Penta. pressrue (right side)	ペンタ押え板（右）	1
2017-5016-02	Penta. pressure spring	ペンタ押えSP	2
2017-5018-03	L.E.D diffusion plate	LED 拡散板	1
2017-5034-01	Dustproof sheet	防塵シート	1
2024-5805-02	Fresnel lens	焦点板	1
2017-9106-02	Screw	焦点板調整ねじ	3
9762-1740-07	Tap tite screw	十字穴付なべ頭タップタイトねじ	2
9765-1740-07	Tap tite screw	十字穴付なべ頭タップタイトねじ	2

X-500 (Chrome model) CODE No. 2024-100



Part No.	Part Name		Qty
2017-0103-03	Front base plate set	前枠セット	1
2024-0153-01	Remote control terminal set	リモコン台板セット	1
2024-0418-01	Self-timer plate set	セルフスイッチ基板セット	1
2024-0534-01	Magnetic release base plate set	絞りストップ台板セット	1
2019-2291-01	Synchro terminal	シンクロターミナル	1
2017-1006-02	Lens lock lever	レンズロックレバー	1
2017-1008-02	Mirror box light shield plate	ミラーボックス遮光板	1
2006-1014-02	Lock lever spring	ロックレバースプリング	1
2017-2205-01	Lead wire pressure	コード押え	1
2024-4460-03	Spring	シールドSP	1
2009-5038-01	Penta. front cushion	ペンタ前面押えクッション	2
2024-9101-01	Lens lock axis	レンズロック軸	1
2017-9107-01	Screw	止めねじ	1
9611-1625-01	Phillips type screw	十字穴付なべ頭小ねじ	3
9611-1625-07	Phillips type screw	十字穴付なべ頭小ねじ	2
9612-1625-07	Phillips type screw	十字穴付なべ頭小ねじ	4
9612-1630-07	Phillips type screw	十字穴付なべ頭小ねじ	2
9792-2140-40	Washer	薄ワッシャー	3

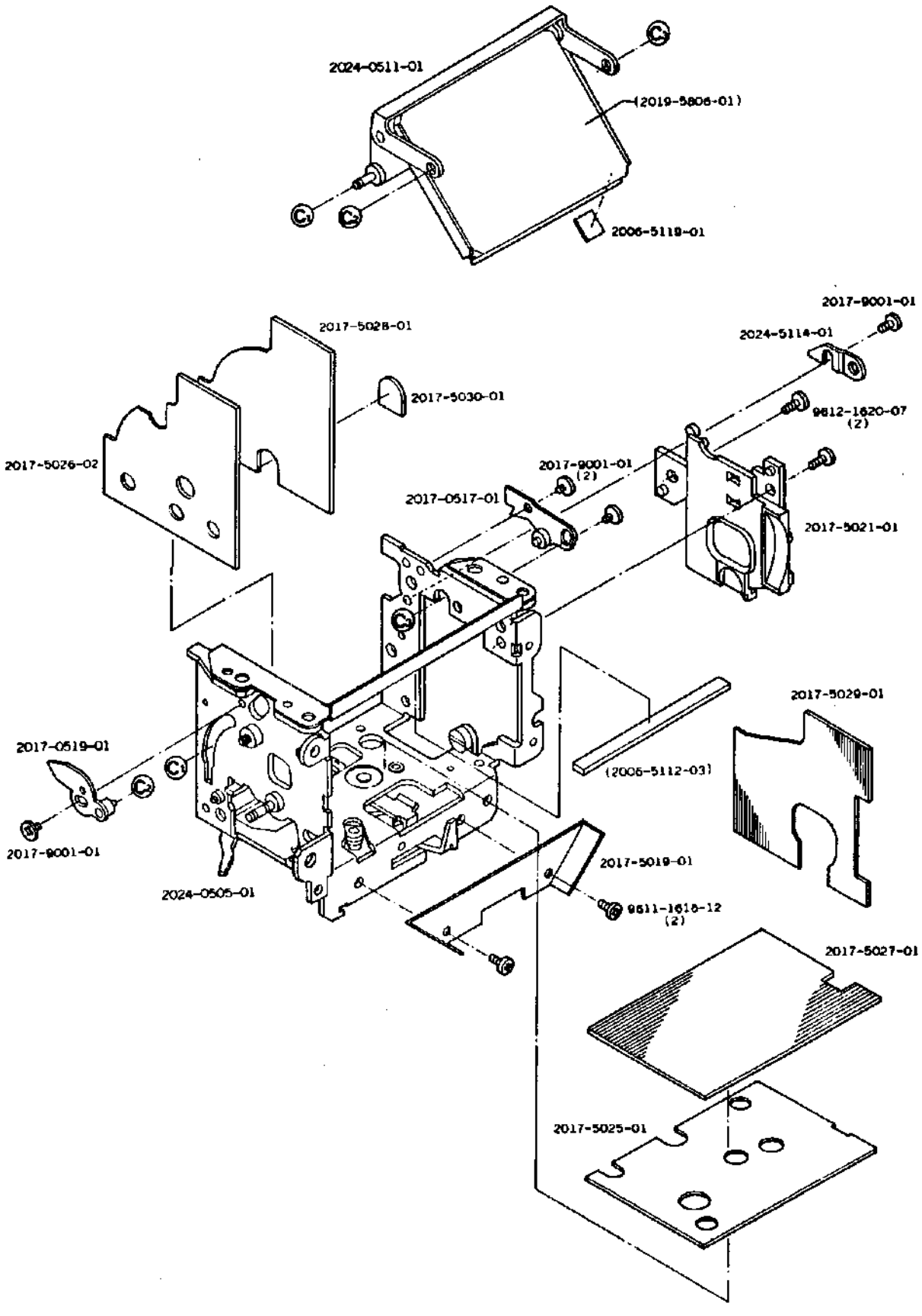
X-500 (Chrome model) CODE No. 2024-100



See Page.10

Part No.	Part Name		Qty
2017-0252-01	MP return stopper set	MP戻しストッパーセット	1
2024-0256-01	MP return lever set	MP戻しレバーセット	1
2024-0512-01	Mirror operation lever set	ミラー駆動レバーセット	1
2024-0530-01	Mirror delay lever set	ミラー遅延レバーセット	1
2024-0539-01	Mirror delay spring set	ミラー遅延SPセット	1
2017-0570-01	MP loop spring set	MPループSPセット	1
2017-0571-01	Mirror operation lever spring set	ミラー駆動SPセット	1
2024-0572-01	PV lever set	PVレバーセット	1
2024-0584-01	Light receptor set	受光ホルダーセット	1
2017-2517-02	MP return spring	MP戻しSP	1
2017-2519-01	MP return stop lever spring	MP戻し係止レバーSP	1
2024-2577-01	PV lever spring	PVレバーSP	1
2024-4321-01	PV plate	PV基板	1
2024-5035-01	Shading plate	ノイズ遮蔽板	1
2024-5106-01	Mirror operation lever-B	ミラー操作レバーB	1
2024-5121-01	Mirror operation lever-B spring	ミラー押えSP	1
2005-9005-01	Screw	MP戻しレバー押えねじ	1
2024-9006-01	PV guide axis	PVガイド軸A	1
9612-1620-01	Phillips type screw	十字穴付なべ頭小ねじ	1
9612-1625-07	Phillips type screw	十字穴付なべ頭小ねじ	1
9721-0080-50	E-ring	E リング	1
9721-0150-13	E-ring	E リング	2
9793-1640-40	Washer	薄ワッシャー	1

X-500 (Chrome model) CODE No. 2024-100



Part No.	Part Name		Qty
2024-0505-01	Mirror box set	ミラーボックスセット	1
(2006-5112-03)	Mirror cushion	ミラークッション	1
2024-0511-01	Mirror holder set	ミラーホルダーセット	1
(2019-5806-01)	Mirror	ミラー	1
2017-0517-01	Mirror adjustment plate-B set	ミラー調整板Bセット	1
2017-0519-01	Mirror adjustment plate-A set	ミラー調整板Aセット	1
2017-5019-01	Mirror box apron	ミラーボックスエプロン	1
2017-5021-01	Mirror box side plate	ミラーボックス側板	1
2017-5025-01	Flare shield bottom plate	フレアー防止シート下板	1
2017-5026-02	Flare shield right plate	フレアー防止シート右板	1
2017-5027-01	Flare shield bottom plate-A	フレアー防止シート下	1
2017-5028-01	Flare shield right plate-A	フレアー防止シート右A	1
2017-5029-01	Flare shield left plate	フレアー防止シート左	1
2017-5030-01	Flare shield right plate-B	フレアー防止シート右B	1
2024-5114-01	Mirror support stopper	ミラー補助ストッパーB	1
2006-5119-01	Mirror stopper gum	ミラーストッパーゴム	1
2017-9001-01	Screw	調整板押えビス	4
9611-1616-12	Phillips type screw	十字穴付なべ頭小ねじ	2
9612-1620-07	Phillips type screw	十字穴付なべ頭小ねじ	2

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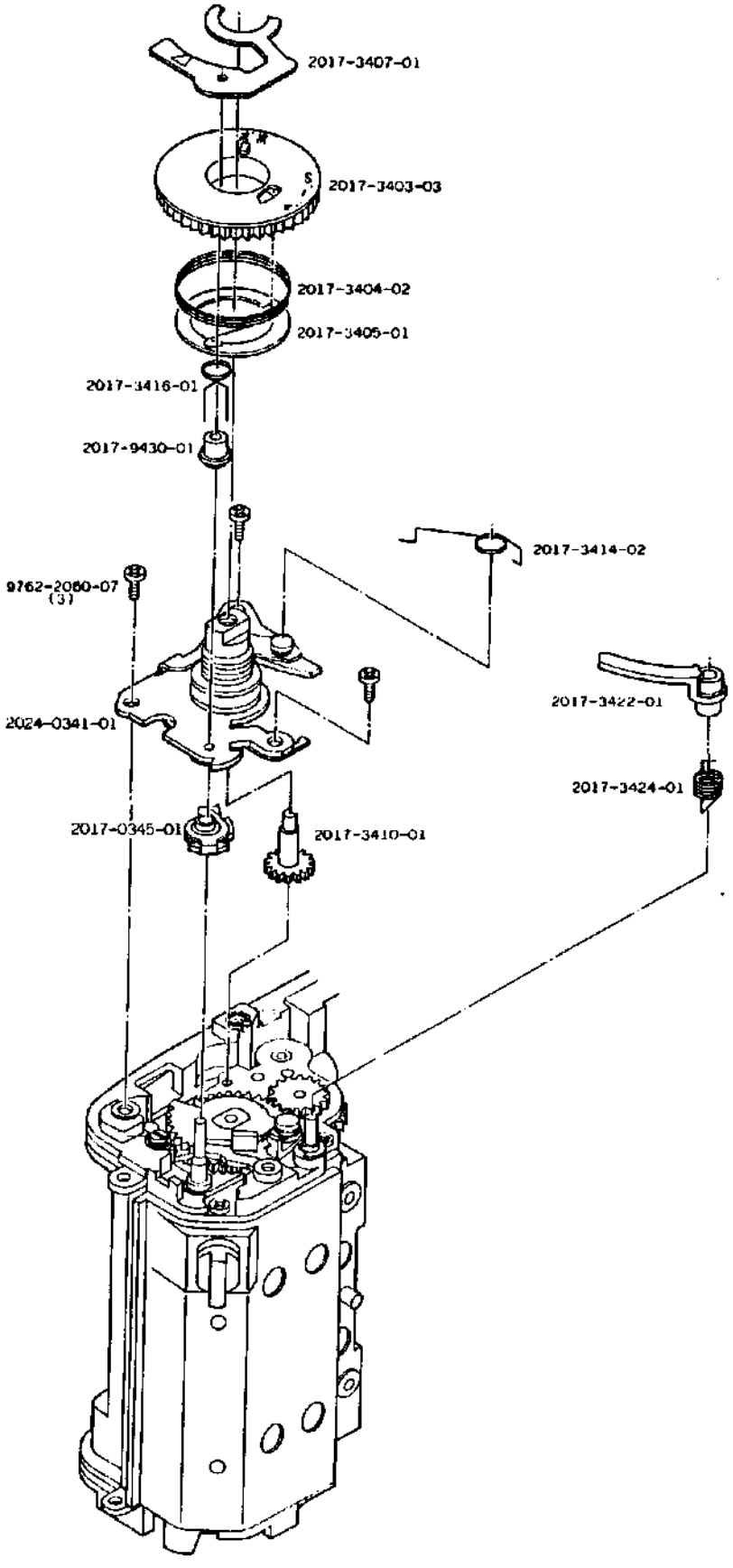

Part No.	Part Name		Qty
2024-0341-01	Winding base plate-B set	巻取台板Bセット	1
2017-0345-01	Winding operation lever set	トンボ返りレバーセット	1
2017-3403-03	Counter dial	カウンターラチエット	1
2017-3404-02	Counter return spring	カウンター戻しSP	1
2017-3405-01	Washer	カウンター補助ワッシャー	1
2017-3407-01	Counter index	カウンター指標板	1
2017-3410-01	Counter operation gear	フイルムカウンターギヤー	1
2017-3414-02	Return spring	カウンターレバー操作SP	1
2017-3416-01	Winding operation lever spring	トンボー返りレバーSP	1
2017-3422-01	Safe loading signal lever	フイルム表示レバー	1
2017-3424-01	S.L.S lever spring	SLS 駆動SP	1
2017-9430-01	Collar	カウンター指標カラー	1
9762-2060-07	Tap tite screw	十字穴付なべ頭タップタイトねじ3	

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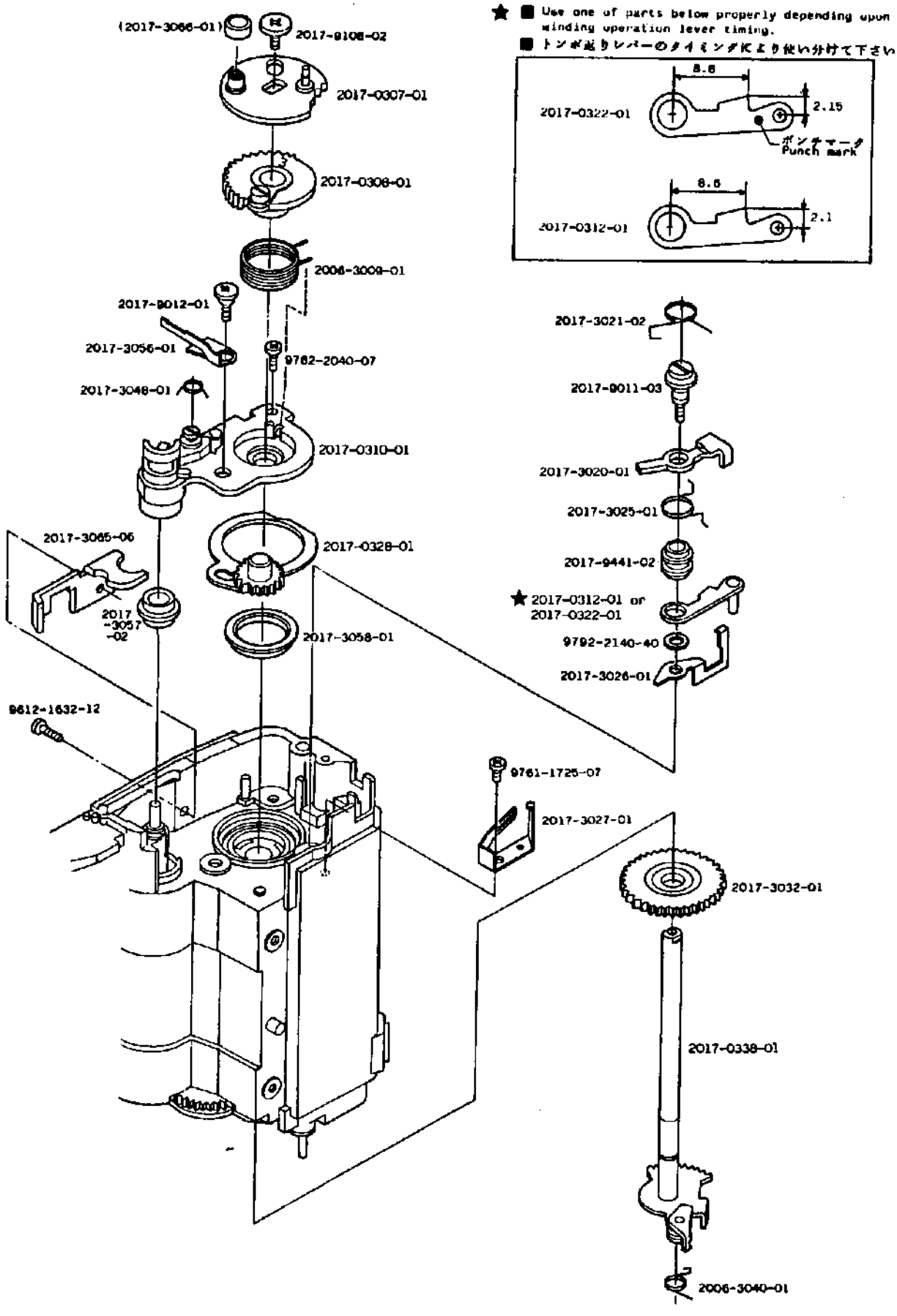
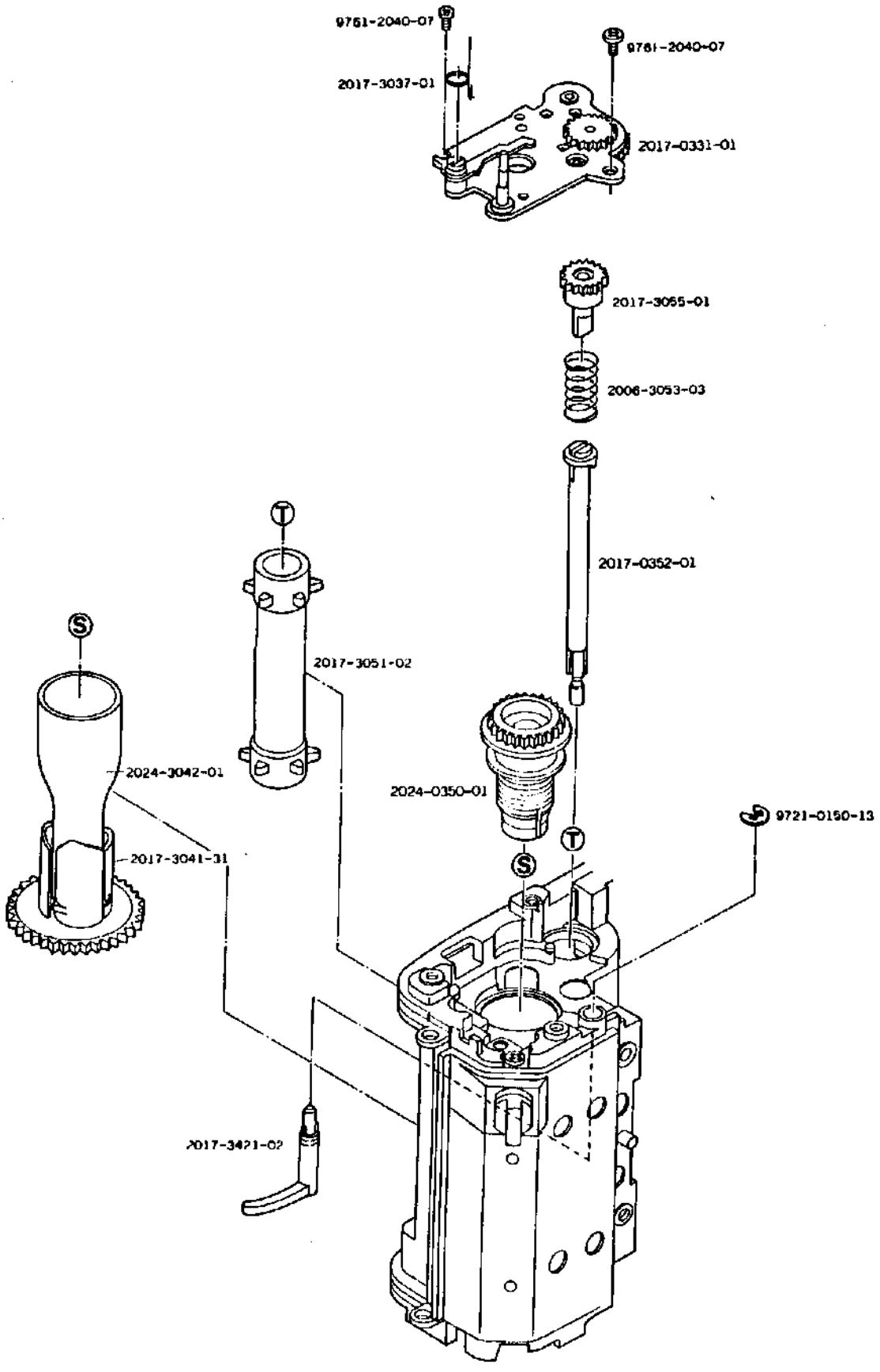


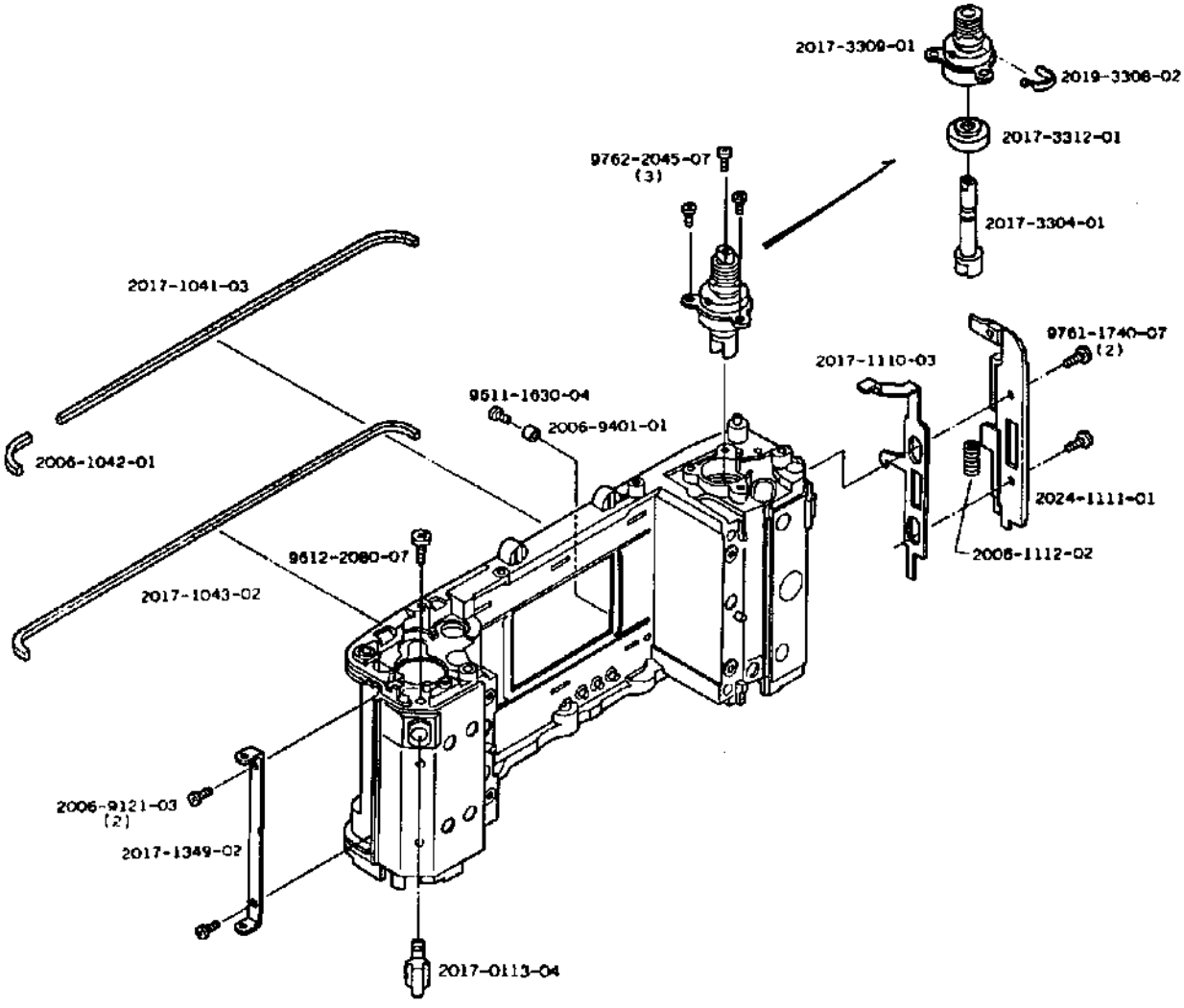
Part No.	Part Name		Qty
2017-0307-01	Charge operation plate set	チャージ操作板セット	1
(2017-3066-01)	Stopper	巻上ストッパーゴム	1
2017-0308-01	Shutter charge gear-D set	シャッターチャージギヤーDセット	1
2017-0310-01	Winding shaft receiver set	巻取下軸受セット	1
2017-0312-01	Winding stop lever-A set	巻止めレバーAセット	1
2017-0322-01	Winding stop lever-A set	巻止めレバーAセット	
2017-0328-01	Gear-C base plate set	ギヤーC台板セット	1
2017-0338-01	Winding shaft set	巻取操作板セット	1
2006-3009-01	Return spring	戻しSP	1
2017-3020-01	Reset lever	リセットレバー	1
2017-3021-02	Reset lever spring	リセットレバーSP	1
2017-3025-01	Reset lever support spring	リセットレバー補助SP	1
2017-3026-01	Contact-A (S4)	S4 接片A	1
2017-3027-01	Contact-B (S4)	S4 接片B	1
2017-3032-01	Winding gear	巻取ギヤー	1
2006-3040-01	Winding claw spring	巻取爪SP	1
2017-3048-01	Over-run stop lever spring	オーバーラン防止レバーSP	1
2017-3056-01	R button lock spring	R釦ロックばね	1
2017-3057-02	Sprocket receiver	スプロケット軸受	1
2017-3058-01	Collar	巻取下軸受補助カラー	1
2017-3065-06	Stopper	チャージ操作板ストッパー	1
2017-9011-03	Screw	巻止めレバー軸	1
2017-9012-01	Screw	巻止軸受止めねじ	1
2017-9108-02	Screw	チャージ板押えビス	1
2017-9441-02	Collar	巻止めレバーカラー	1
9612-1632-12	Phillips type screw	十字穴付なべ頭小ねじ	1
9761-1725-07	Tap tite screw	十字穴付なべ頭タップタイトねじ	1
9762-2040-07	Tap tite screw	十字穴付なべ頭タップタイトねじ	1
9792-2140-40	Washer	薄ワッシャー	1

X-500 (Chrome model) CODE No. 2024-100



Part No.	Part Name		Qty
2017-0331-01	Winding base plate-A set	巻取台板Aセット	1
2024-0350-01	Spool friction gear set	スプールフリクションギヤーセット	1
2017-0352-01	Sprocket shaft set	スプロケット軸セット	1
2017-3037-01	Reversion stop lever spring	逆転止めレバーSP	1
2017-3041-31	Spool	スプール	1
2024-3042-01	Spool inner barrel	スプール内筒	1
2017-3051-02	Sprocket	スプロケット	1
2006-3053-03	R button release spring	R釦解除スプリング	1
2017-3055-01	Sprocket gear	スプロケットギヤー	1
2017-3421-02	Film indication filler	フイルム表示フイラー	1
9761-2040-07	Tap tite screw	十字穴付なべ頭タップタイトねじ	2
9721-0150-13	E-ring	E リング	1

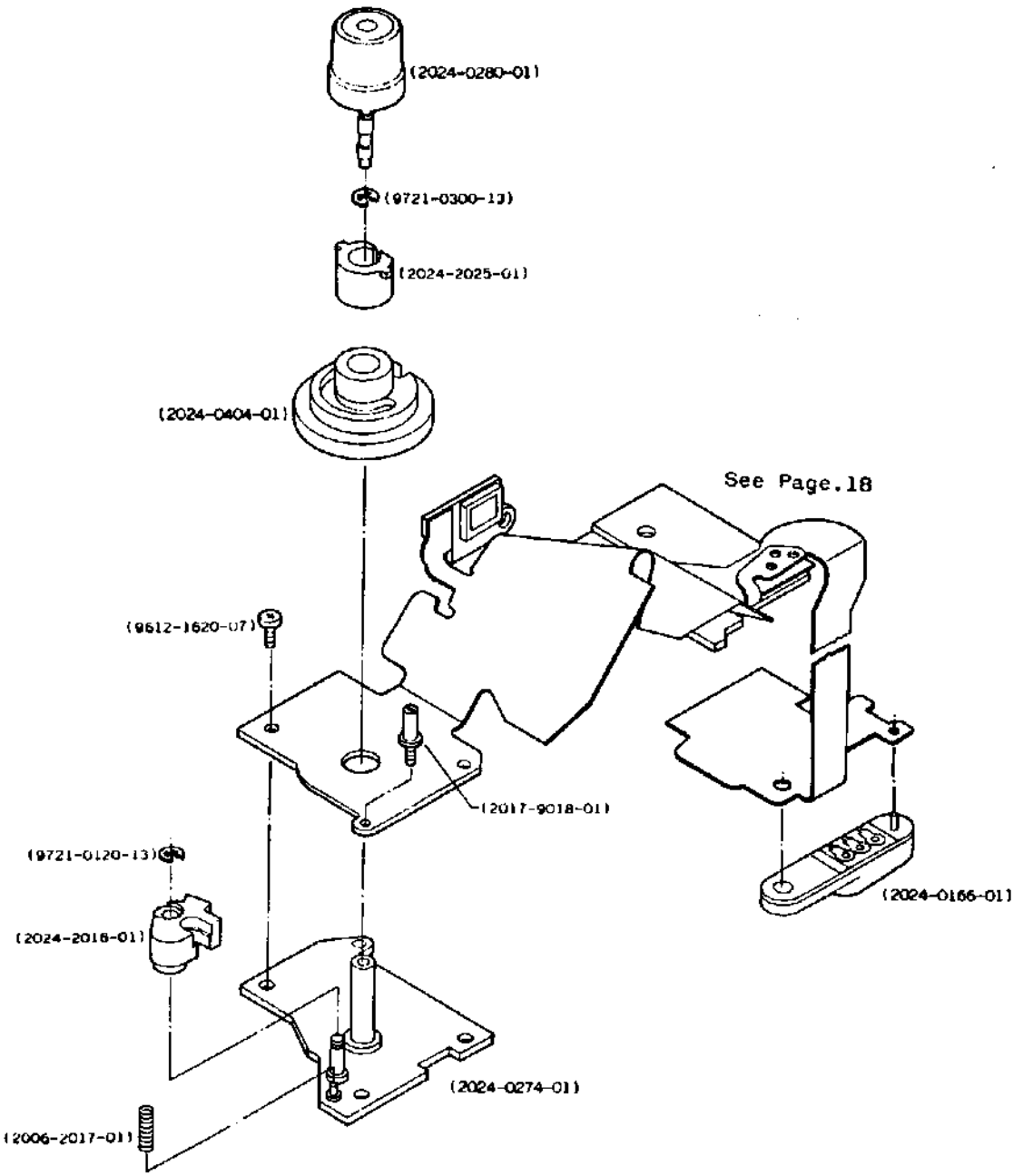
X-500 (Chrome model) CODE No. 2024-100



Part No.	Part Name		Qty
2017-0113-04	Strap hanger set	吊環セット	1
2017-1041-03	Light shield packing-A	遮光パッキンA	1
2006-1042-01	Light shield packing-B	遮光パッキンB	1
2017-1043-02	Light shield packing-C	遮光パッキンC	1
2017-1110-03	Back cover lock lever	裏蓋ロックレバー	1
2024-1111-01	Lock cover	ロックカバー	1
2006-1112-02	Back cover lock spring	裏蓋ロックスプリング	1
2017-1349-02	Hinge	ヒンジ	1
2017-3304-01	Rewinding fork	巻戻しフオーク	1
2019-3308-02	Rewinding friction spring	巻戻しフリクションスプリング	1
2017-3309-01	Rewinding axis receiver	巻戻し軸受	1
2017-3312-01	Light shield collar	巻戻し遮光カラー	1
2006-9121-03	Screw	止めねじ	2
2006-9401-01	Film guide collar	フイルムガイドカラー	1
9611-1630-04	Phillips type screw	十字穴付なべ頭小ねじ	1
9612-2080-07	Phillips type screw	十字穴付なべ頭小ねじ	1
9761-1740-07	Tap tite screw	十字穴付なべ頭タップタイトねじ	2
9762-2045-07	Tap tite screw	十字穴付なべ頭タップタイトねじ	3

X-500 (Chrome model) CODE No. 2024-100

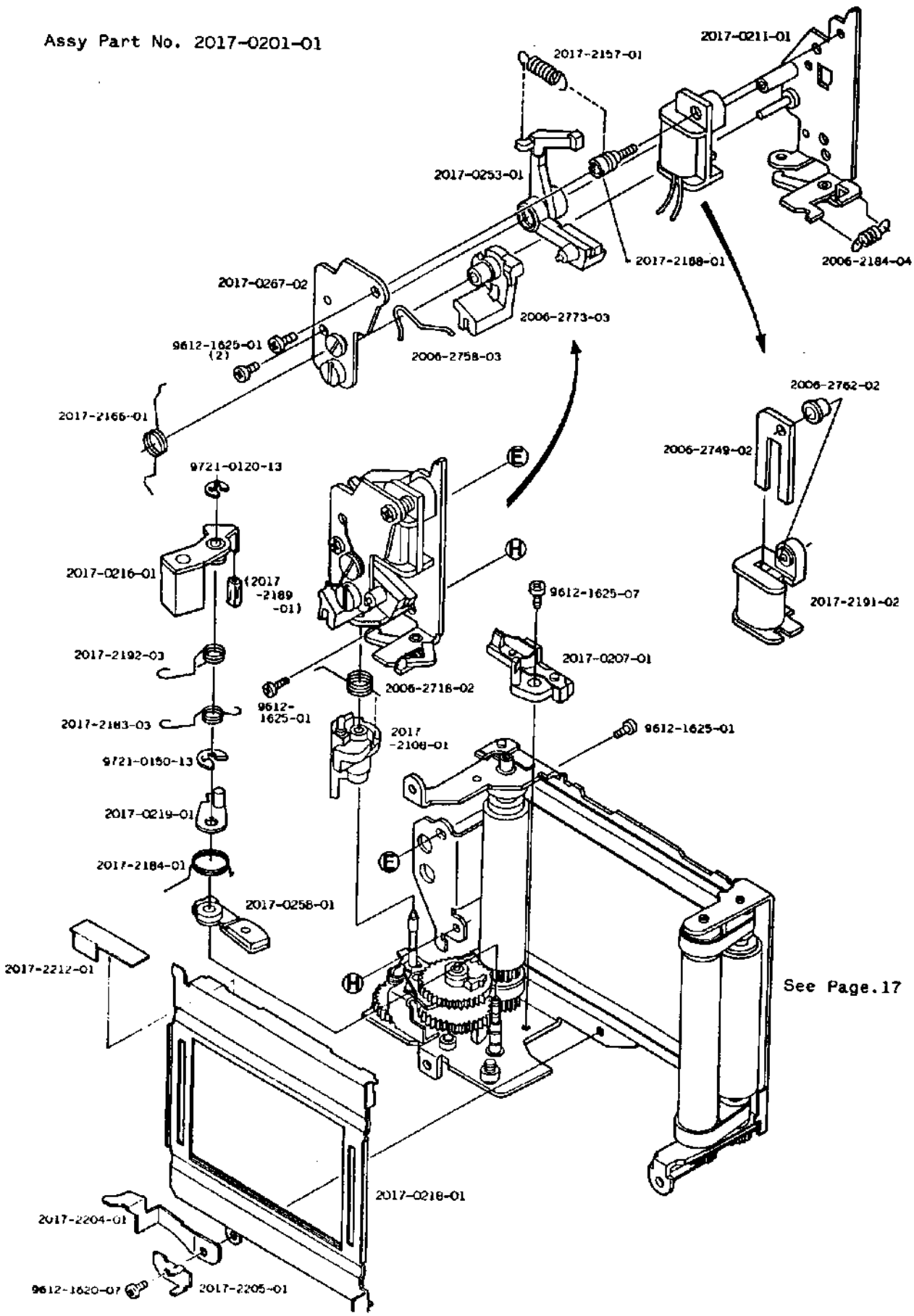
Assy Part No.2024-0401-01



Part No.	Part Name		Qty
2024-0401-01	Flexible P.C. board set	フレキシブル基板セット	1
(2024-0166-01)	Motor drive connect holder set	モータードライブ接点ホルダーセット	1
(2024-0274-01)	Shutter speed dial base plate set	シャッターダイヤル台板セット	1
(2024-0280-01)	Operating button set	シャッター釦セット	1
(2024-0404-01)	TV contact set	TV 接片セット	1
(2024-2016-01)	Auto lock plate	オートロック板	1
(2006-2017-01)	Auto lock spring	オートロックばね	1
(2024-2025-01)	Operating button receiver	シャッター釦受け	1
(2017-9018-01)	Auto lock plate guide	オートロック板ガイド	1
(9612-1620-07)	Phillips type screw	十字穴付なべ頭小ねじ	1
(9721-0120-13)	E-ring	E リング	1
(9721-0300-13)	E-ring	E リング	1

X-500 (Chrome model) CODE No. 2024-100

Assy Part No. 2017-0201-01



Part No.	Part Name		Qty
2017-0201-01	Shutter block	シャッターブロック	1
2017-0207-01	X contact plate set	X 接片セット	1
2017-0211-01	Control base plate set	制御台板セット	1
2017-0216-01	2nd. curtain brake lever set	二幕ブレーキレバーセット	1
(2017-2189-01)	Isolation tube	X 接片絶縁チューブ	1
2017-0218-01	Shutter cover plate set	シャッターカバー板セット	1
2017-0219-01	1st. curtain support lever set	一幕ブレーキ補助レバーセット	1
2017-0253-01	2nd. curtain release lever set	二幕解除レバーセット	1
2017-0258-01	1st. curtain brake lever set	一幕ブレーキレバーセット	1
2017-0267-02	Wiring base plate set	Mag. 配線基板セット	1
2017-2108-01	Control cam	制御カム	1
2017-2157-01	2nd. curtain release lever spring	二幕解除レバースプリング	1
2017-2166-01	Trigger contact	トリガー接片	1
2017-2168-01	Screw	トリガー基板取付ねじ	1
2017-2183-03	1st. curtain brake spring-B	一幕ブレーキスプリング B	1
2006-2184-04	Control cam stop lever spring	制御カム係止レバースプリング	1
2017-2184-01	1st. curtain brake spring-A	一幕ブレーキスプリングA	1
2017-2191-02	Shutter magnet bobbin	シャッターマグネットボビン	1
2017-2192-03	2nd. curtain brake spring-A	二幕ブレーキスプリングA	1
2017-2204-01	Ribbon guide plate-B	幕リボンガイド板B	1
2017-2205-01	Lead wire pressure	リード線押え	1
2017-2212-01	Shutter light shield plate	シャッター遮光シート	1
2006-2718-02	Control cam operation spring	制御カム駆動スプリング	1
2006-2749-02	Shutter magnet core	シャッターマグネット鉄芯	1
2006-2758-03	Over charge spring	吸着片オーバーチャージスプリング	1
2006-2762-02	Magnet collar	マグネット取付カラー	1
2006-2773-03	Trigger contact operation lever	トリガー接片作動レバー	1
9612-1620-07	Phillips type screw	十字穴付なべ頭小ねじ	1
9612-1625-01	Phillips type screw	十字穴付なべ頭小ねじ	4
9612-1625-07	Phillips type screw	十字穴付なべ頭小ねじ	1
9721-0120-13	E-ring	E リング	1
9721-0150-13	E-ring	E リング	1

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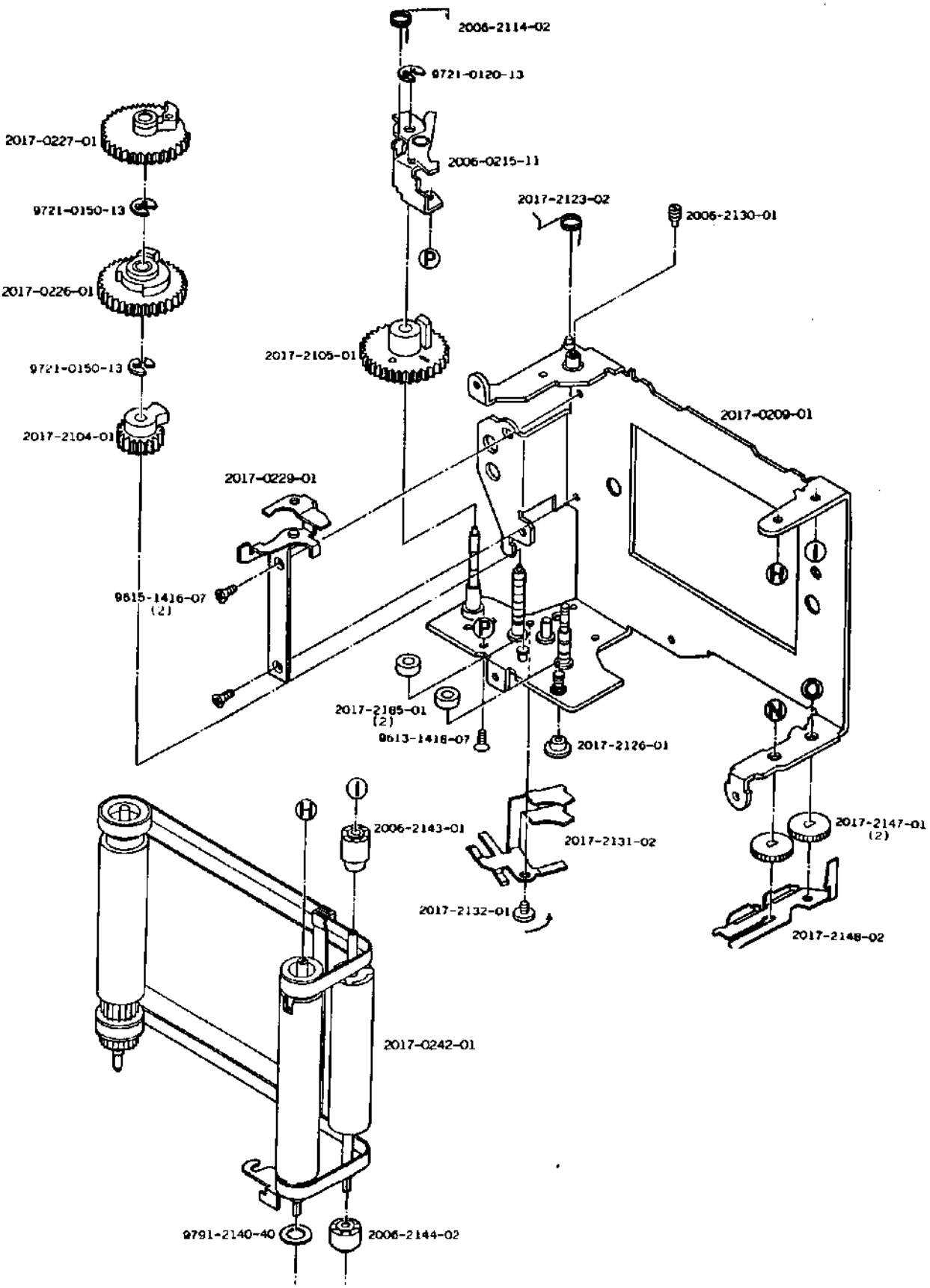
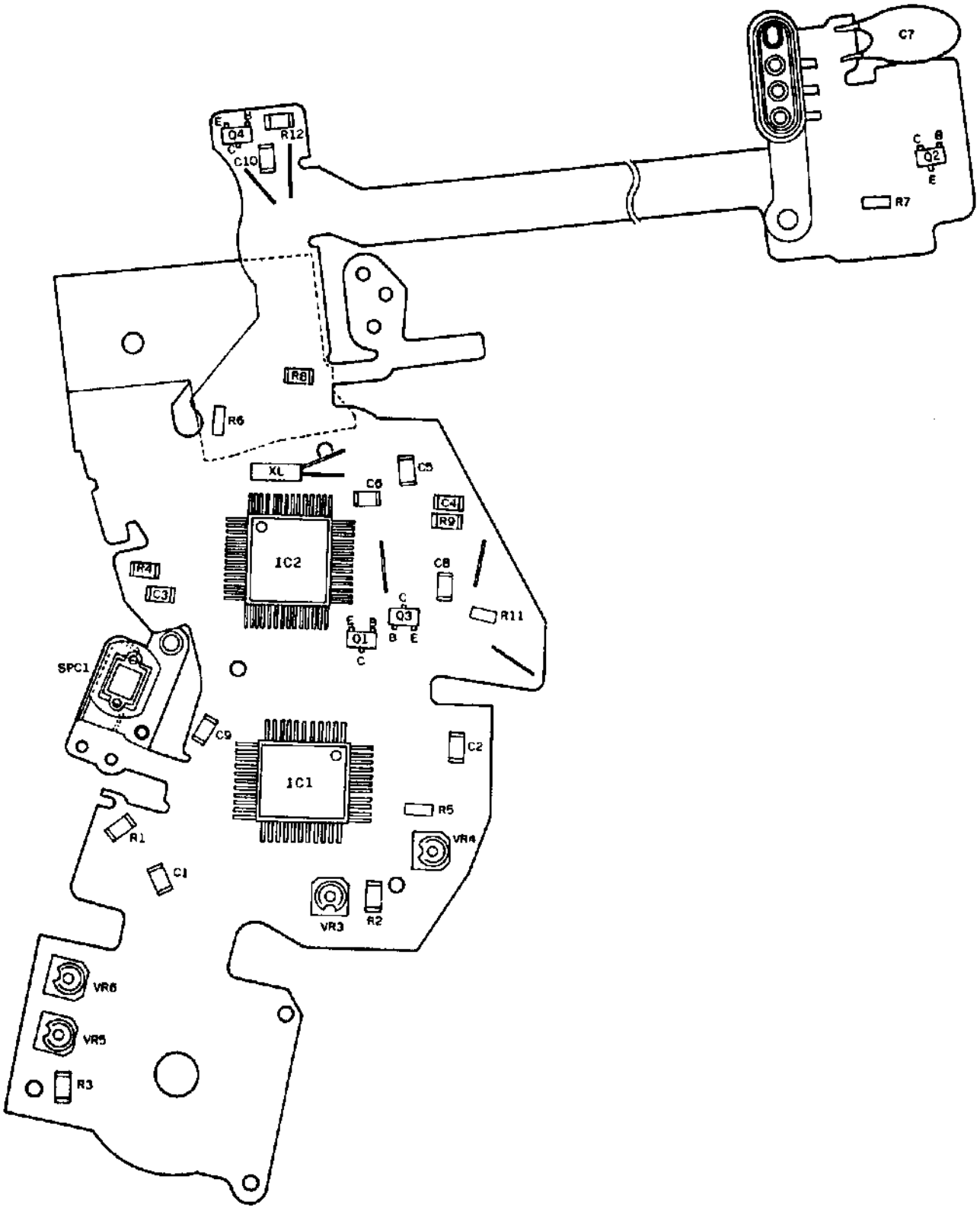
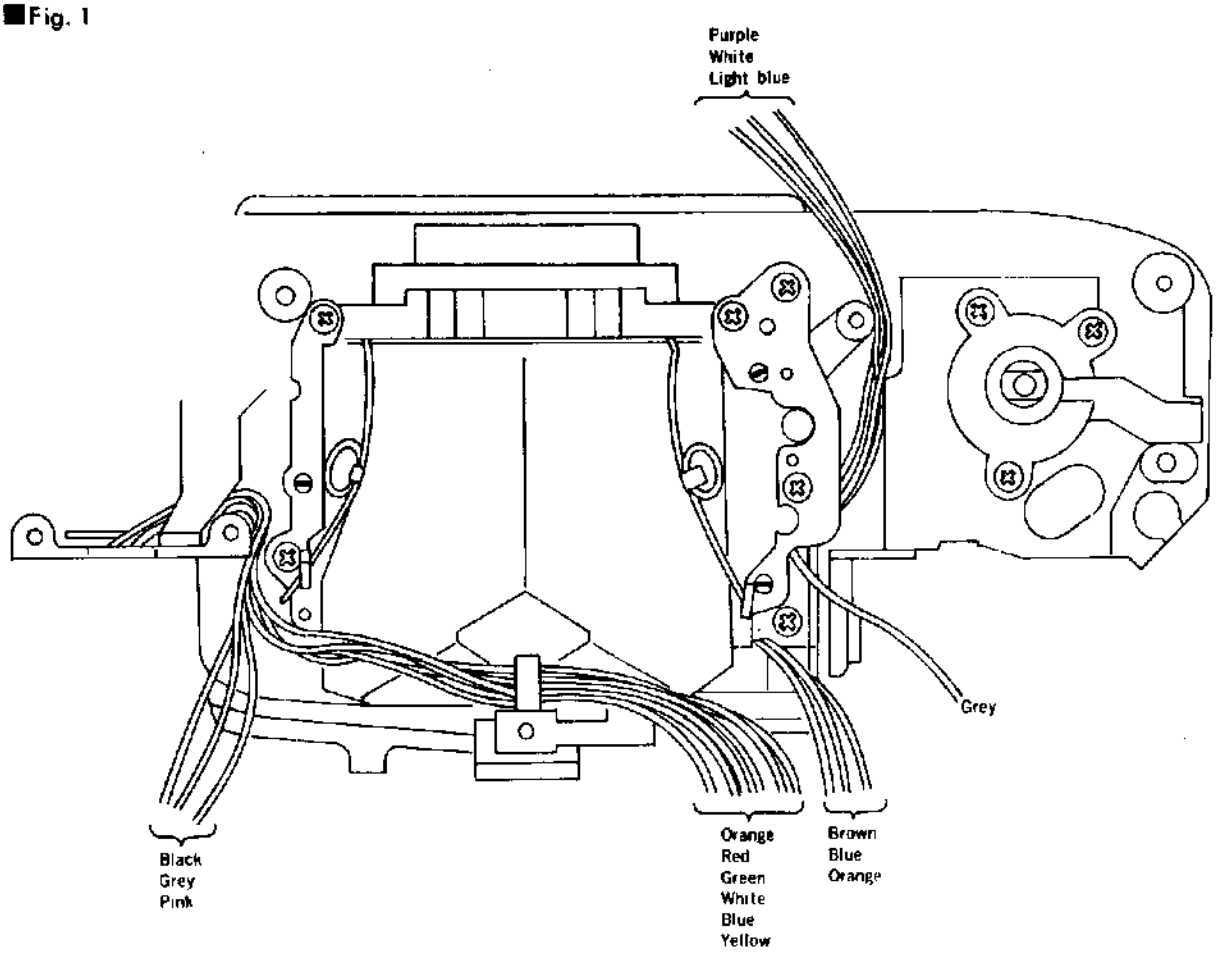


Part No.	Part Name		Qty
2017-0209-01	Shutter base plate set	シャッター台板セット	1
2006-0215-11	1st. curtain stop lever set	一幕係止レバーセット	1
2017-0226-01	1st. curtain shutter gear set	一幕シャッターギヤーセット	1
2017-0227-01	2nd. curtain shutter gear set	二幕シャッターギヤーセット	1
2017-0229-01	2nd. curtain stop lever set	二幕係止レバーセット	1
2017-0242-01	Shutter curtain set	シャッター幕セット	1
2017-2104-01	Charge gear-B	チャージギヤーB	1
2017-2105-01	Charge gear-A	チャージギヤーA	1
2006-2114-02	1st. curtain stop lever spring	一幕係止レバースプリング	1
2017-2123-02	2nd. curtain stop lever spring	二幕係止レバースプリング	1
2017-2126-01	Curtain shaft receiver-B	幕軸受B	1
2006-2130-01	Adjusting screw	幕軸調整ビス	1
2017-2131-02	Ribbon guide plate	幕リボンガイド板	1
2017-2132-01	Screw	幕リボンガイド板止めねじ	1
2006-2143-01	2nd. curtain roller-A	二幕ローラーA (上)	1
2006-2144-02	2nd. curtain roller-B	二幕ローラーB (下)	1
2017-2147-01	Ratchet	SP筒軸止めラチエット	2
2017-2148-02	Ratchet stop spring	ラチエット止めばね	1
2017-2185-01	Brake stopper	ブレーキストッパー	2
9613-1418-07	Phillips type screw	十字穴付皿頭小ねじ	1
9615-1416-07	Phillips type screw	十字穴付皿頭小ねじ	2
9721-0120-13	E-ring	E リング	1
9721-0150-13	E-ring	E リング	2
9791-2140-40	Washer	薄ワッシャー	1

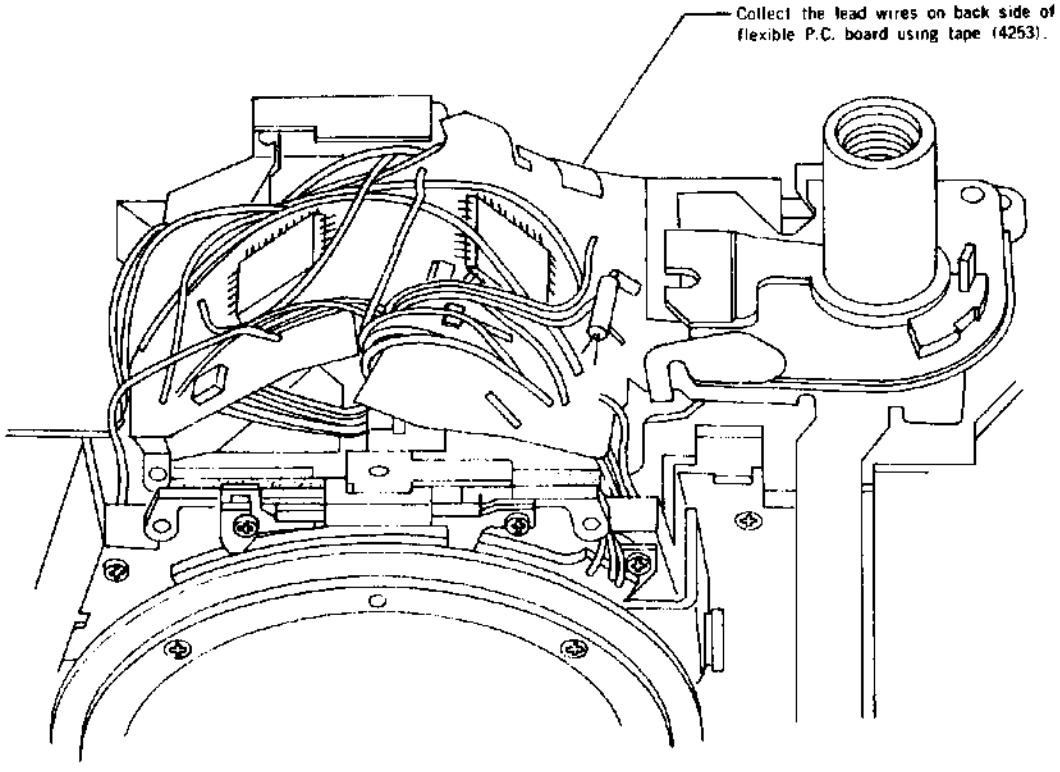
X-500 (Chrome model) CODE No. 2024-100



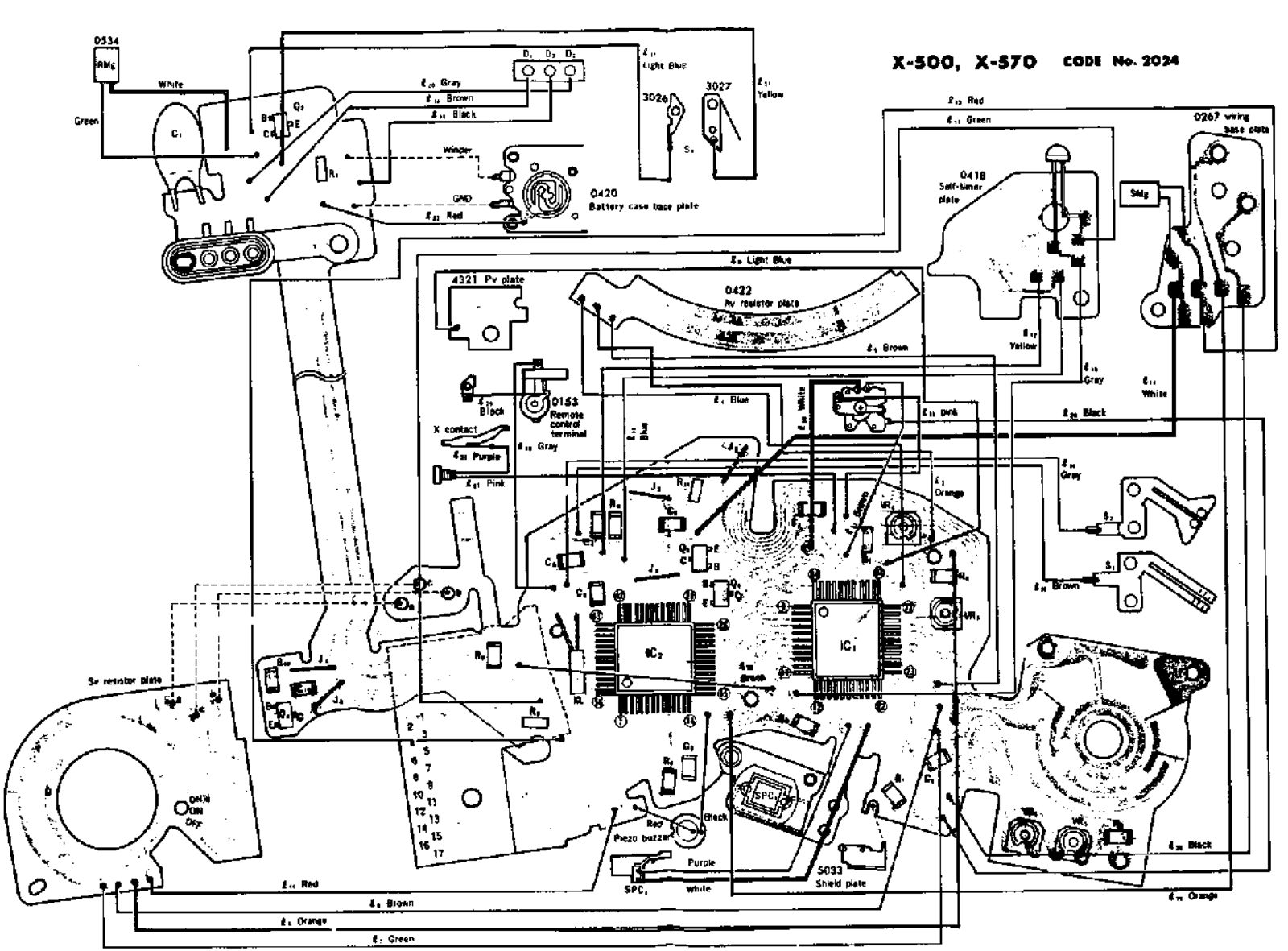
■Fig. 1


Purple
White
Light blue
Grey
Black
Grey
Pink
Orange
Red
Green
White
Blue
Yellow
Brown
Blue
Orange

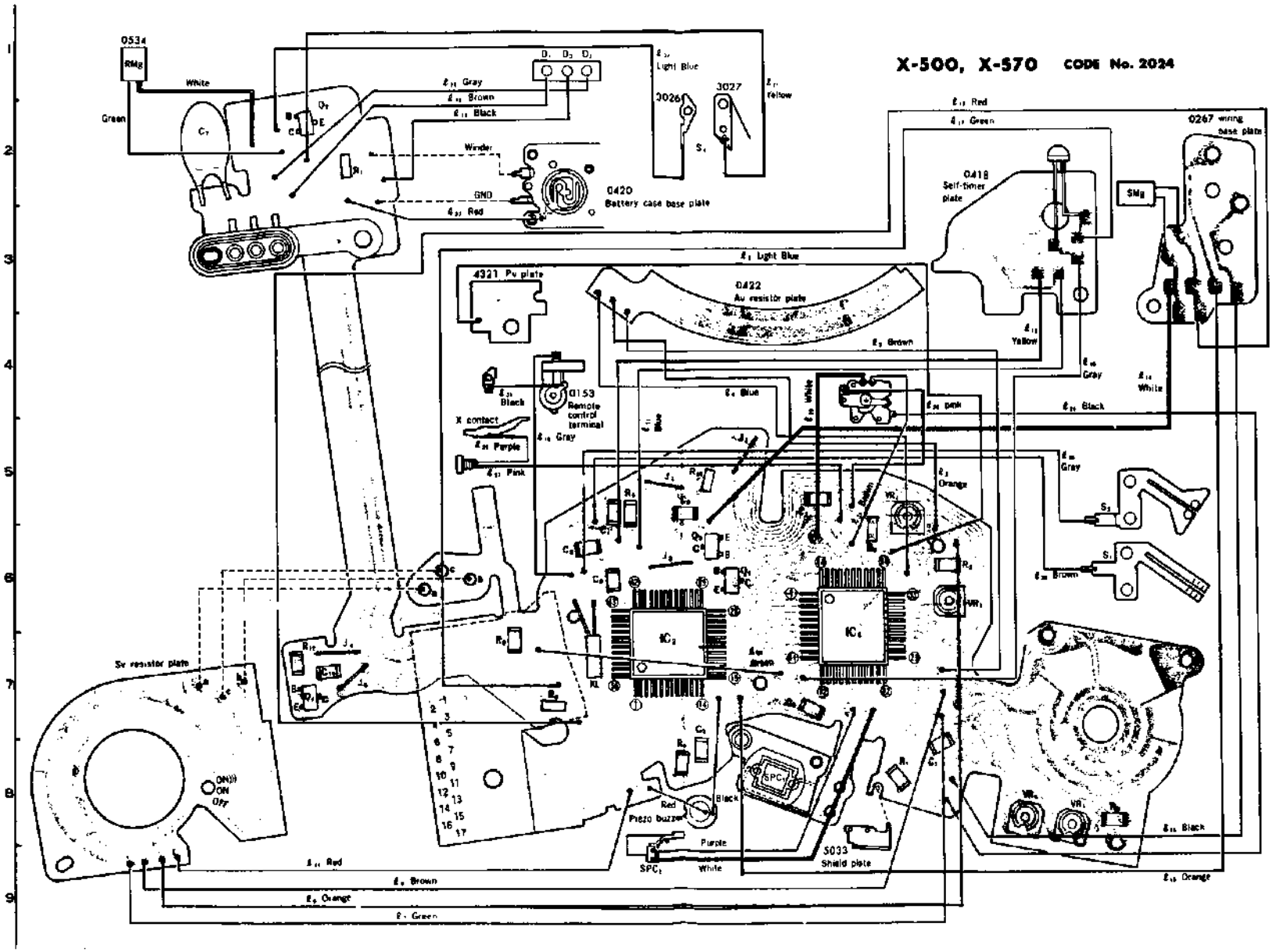
■Fig. 2


Collect the lead wires on back side of flexible P.C. board using tape (4253).

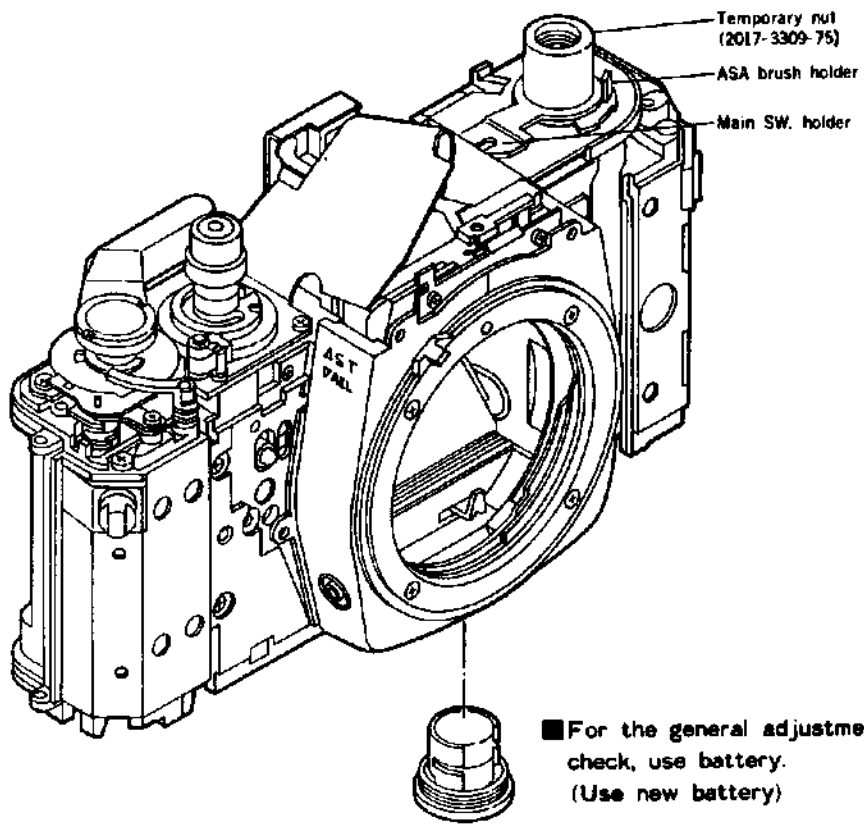
X-500, X-570 CODE No. 2024



X-500, X-570 CODE No. 2024



■ Preparation for adjustments



■For the general adjustment or check, use battery.
(Use new battery)

■ Body back adjustment

■**Measuring instruments** : Body back gauge
: Flat plate (for 2005)
: Dial gauge

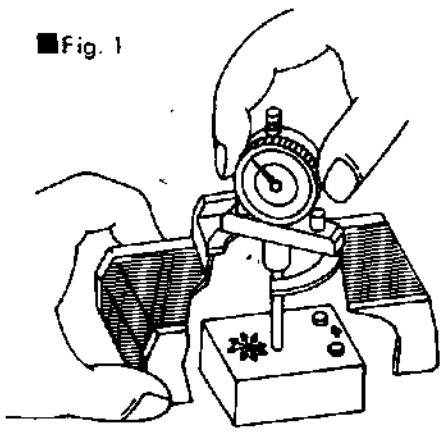
■**Adjustment procedure**

Check and correct the flatness of the pressure plate contact surface before measuring the body back.

(Standard) $43.72^{+0.01}_{-0.02}$ mm

● If the body back is lower than the standard value, insert adjusting washers under the bayonet mount.

■Fig. 1



(Types of adjusting washers)

Part No.	2005-1061-81	2005-1062-81	2005-1063-81
Thickness (mm)	0.02	0.05	0.1

● If the body back is higher than the standard value, replace the bayonet mount with the bayonet mount used for repair (2017-1010-81) and adjust in combination with the adjusting washers.
The flange of the bayonet mount used for repair is 0.1 mm thinner than that of the regular bayonet mount (2017-1010-01).

Lead wires list

Symbol	Part No.	Color	Typ.	Qty.
ℓ3	9391-0507-03	Orange	ø0.05/7 wires ℓ=70	1
ℓ4	9391-0507-06	Blue	ø0.05/7 wires ℓ=70	1
ℓ5	9391-0507-01	Brown	ø0.05/7 wires ℓ=75	1
ℓ6	9391-0507-01	Brown	ø0.05/7 wires ℓ=85	1
ℓ7	9391-0507-05	Green	ø0.05/7 wires ℓ=90	1
ℓ8	9391-0507-03	Orange	ø0.05/7 wires ℓ=95	1
ℓ9	9391-0807-11	Light Blue	ø0.08/7 wires ℓ=135	1
ℓ10	9391-0807-08	Gray	ø0.08/7 wires ℓ=40	1
ℓ11	9391-0807-06	Blue	ø0.08/7 wires ℓ=95	1
ℓ12	9391-0807-04	Yellow	ø0.08/7 wires ℓ=95	1
ℓ13	9391-0807-02	Red	ø0.08/7 wires ℓ=105	1
ℓ14	9391-0807-09	White	ø0.08/7 wires ℓ=75	1
ℓ15	9391-0807-03	Orange	ø0.08/7 wires ℓ=105	1
ℓ16	9391-0807-08	Gray	ø0.08/7 wires ℓ=65	1
ℓ17	9391-0807-05	Green	ø0.08/7 wires ℓ=115	1
ℓ18	9391-0807-01	Brown	ø0.08/7 wires ℓ=40	1
ℓ19	9391-0807-00	Black	ø0.08/7 wires ℓ=35	1
ℓ20	9391-0807-08	Gray	ø0.08/7 wires ℓ=55	1
ℓ21	9391-0807-04	Yellow	ø0.08/7 wires ℓ=160	1
ℓ22	9391-0807-02	Red	ø0.08/7 wires ℓ=25	1
ℓ25	9391-0807-00	Black	ø0.08/7 wires ℓ=50	1
ℓ26	9391-0807-00	Black	ø0.08/7 wires ℓ=80	1
ℓ27	9391-0807-10	Pink	ø0.08/7 wires ℓ=80	1
ℓ28	9391-0807-10	Pink	ø0.08/7 wires ℓ=50	1
ℓ29	9391-0807-07	Purple	ø0.08/7 wires ℓ=65	1
ℓ30	9391-0807-09	White	ø0.08/7 wires ℓ=65	1
ℓ31	9391-0807-01	Brown	ø0.08/7 wires ℓ=70	1
ℓ32	9391-0807-05	Green	ø0.08/7 wires ℓ=35	1
ℓ35	9391-0807-01	Brown	ø0.08/7 wires ℓ=70	1
ℓ36	9391-0807-08	Gray	ø0.08/7 wires ℓ=70	1
ℓ37	9391-0807-11	Light Blue	ø0.08/7 wires ℓ=170	1
ℓ39	9391-0507-00	Black	ø0.05/7 wires ℓ=25	1
ℓ41	9391-0507-02	Red	ø0.05/7 wires ℓ=40	1

Above lead wires must be ordered in lengths rounded to nearest meter.
上記リード線の供給は、1m 単位とします。

REPAIR

■ The contents of this manual are mainly related to the assembly and adjustment procedures for the 2024.

■ Since the procedures mentioned in this manual are for assembly they should be followed in reverse for disassembly.

■ Description of symbols

[G] : Grease used & part greased
[O] : Oil used & part oiled
[B] : Adhesive used & part adhered
[T] : Tool used & tool number

■ Assembly and adjustment procedures

Page

[1] Body assembly 1 (spool, sprocket, winding base plate A) 1
■ Sprocket gear positioning method 2
[2] Body assembly 2 (winding shaft) 3
■ Winding gear positioning method 4
■ Reversion stop lever stop timing adjustment 4
[3] Body assembly 3 (winding base plate B) 5
■ Overrun eccentric pin adjustment 6
■ Check of winding mechanism ..... 7~8
[4] Front base plate block assembly 1 (shutter, mirror box, magnet base plate) 9
■ Check of magnet attraction 12
[5] Front base plate block assembly 2 (finder block, bayonet mount, front cover, etc.) 13
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■ Shutter charge adjustment 16
[7] Flexible P.C board installation 17
■ Body back adjustment 19
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■ Exposure adjustment
[1] ASA inclination adjustment 23
[2] A/D conversion reference voltage adjustment 23
[3] Manual SS adjustment 24
[4] A-auto level adjustment 25
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■ Check and adjustment of release lock voltage and LED blink voltage 28, 29
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■ Focusing plate replacement procedure 42

■ Adjustment and checks to be made

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- ■ Winding gear positioning ····· 4
- ■ Film counter operation gear positioning ····· 5
- ■ Reversion stop lever stop timing adjustment ····· 4
- ■ Overrun eccentric pin adjustment ····· 6
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[2] Shutter operation

- ■ Shutter gear position adjustment ····· 15
- ■ Shutter charge adjustment ····· 16
- ■ Shutter curtain position check ····· 33, 34
- ■ Mirror magnet attraction check ····· 12
- ■ Release lock voltage check ····· 28
- ■ Synchro X time lag ····· 36

[3] Shutter speed

- ■ Curtain speed adjustment ····· 24, 36
- ■ Manual SS adjustment ····· 24, 36

[4] Auto exposure

- ■ ASA inclination adjustment ····· 23
- ■ A/D conversion reference voltage adjustment ····· 23
- ■ A-auto level adjustment ····· 25
- ■ Check of release magnet attraction ····· 12
- ■ Check of limits at high and low shutter speeds ····· 28
- ■ Strobe level adjustment (strobe auto) ····· 26

[5] LED

- ■ Check of LED indication ····· 25
- ■ Check of LED blink voltage ····· 28

[6] Viewfinder, focusing

- ■ Body back adjustment ····· 19
- ■ Finder back adjustment ····· 20
- ■ Mirror angle adjustment ····· 39
- ■ F No. infinder adjustment ····· 21

■ Precautions

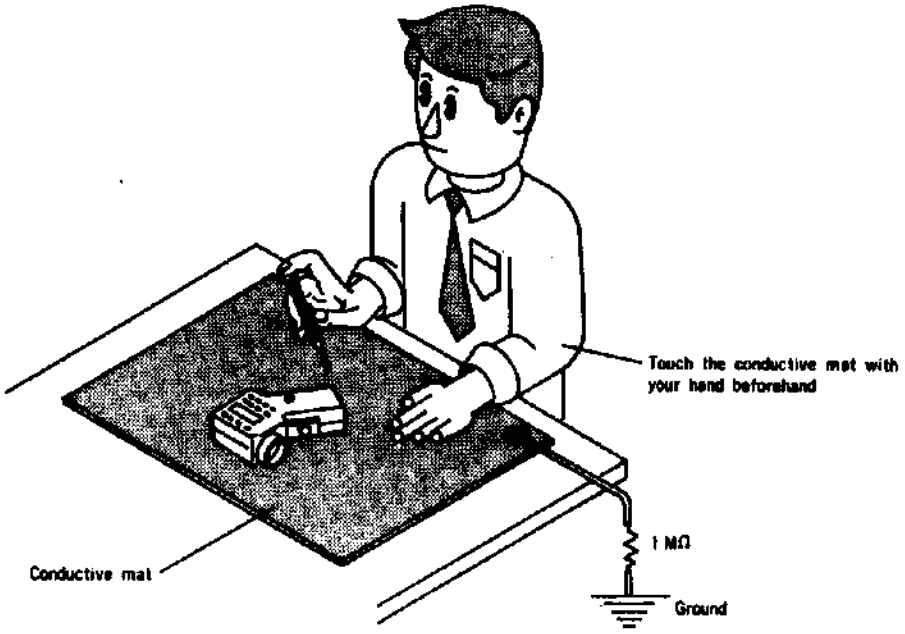
■ The following precautions must be taken concerning all plastic parts.

1. When cleanig, use Flonsolve or alcohol. Do not use thinner, ketone, ether, etc.
2. Secure all parts with the specified screws, taking care not to exent excessive stress to them.

■ Handling of the flexible board

The flexible board uses MOS ICs and is very sensitive to static electricity. Therefore, the following points must be kept in mind when repairing.

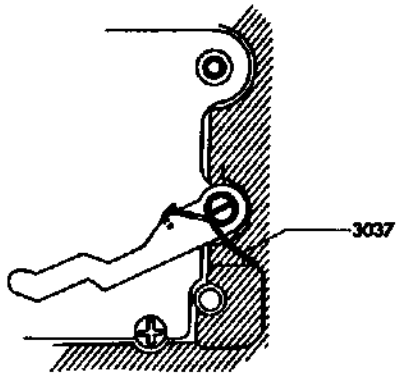
- When handling the flexible board itself or wiring it to the body, use a conduction mat to prevent static electricity, and perform all work as shown in the illustration below.

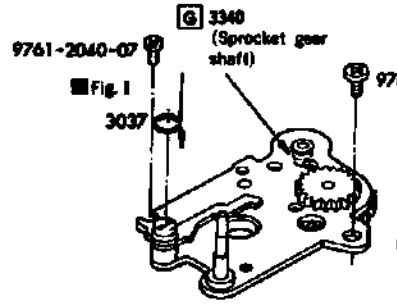


■ When grounding is impossible, connect the cable to a large metal plate (steel desk or shelf).

1 Spool, sprocket, winding base plate A

■Fig. 1 3037 spring setting

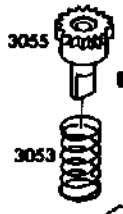




Winding base plate A

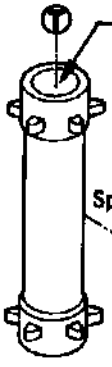
■Set it onto the body with the sprocket gear (3055) in position. Take care not to allow gear disengagement.

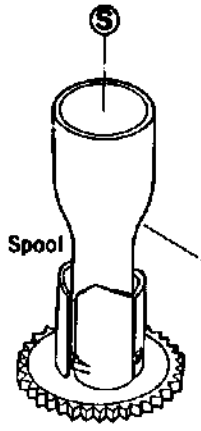
■Set the sprocket as shown in Fig. 2, and fit winding base plate A.

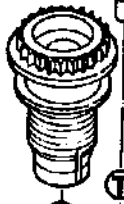


Engage with the sprocket clutch, keeping the groove parallel with the body. The bottom claws must be as shown below.

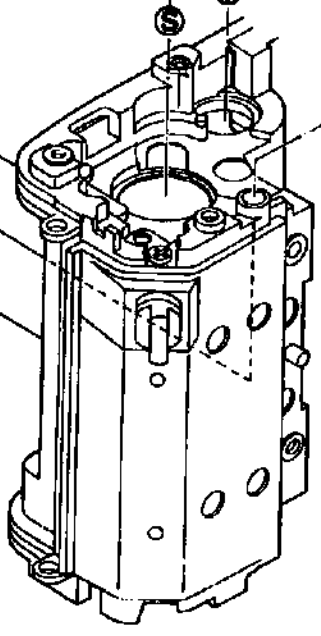
Toward film side



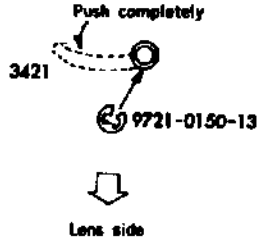




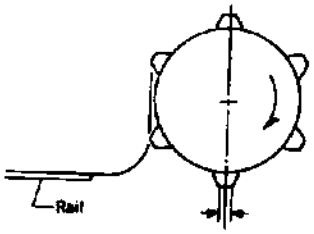
■Fig. 3



■Fig. 3 Installing direction of E-ring

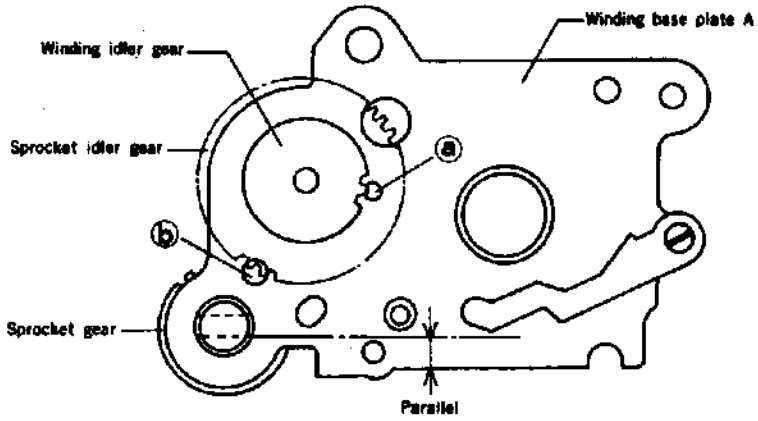


■Fig. 2

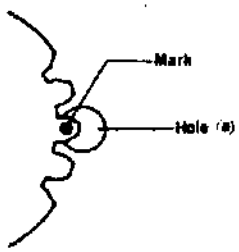


■ Sprocket gear positioning procedure

■Fig. 1



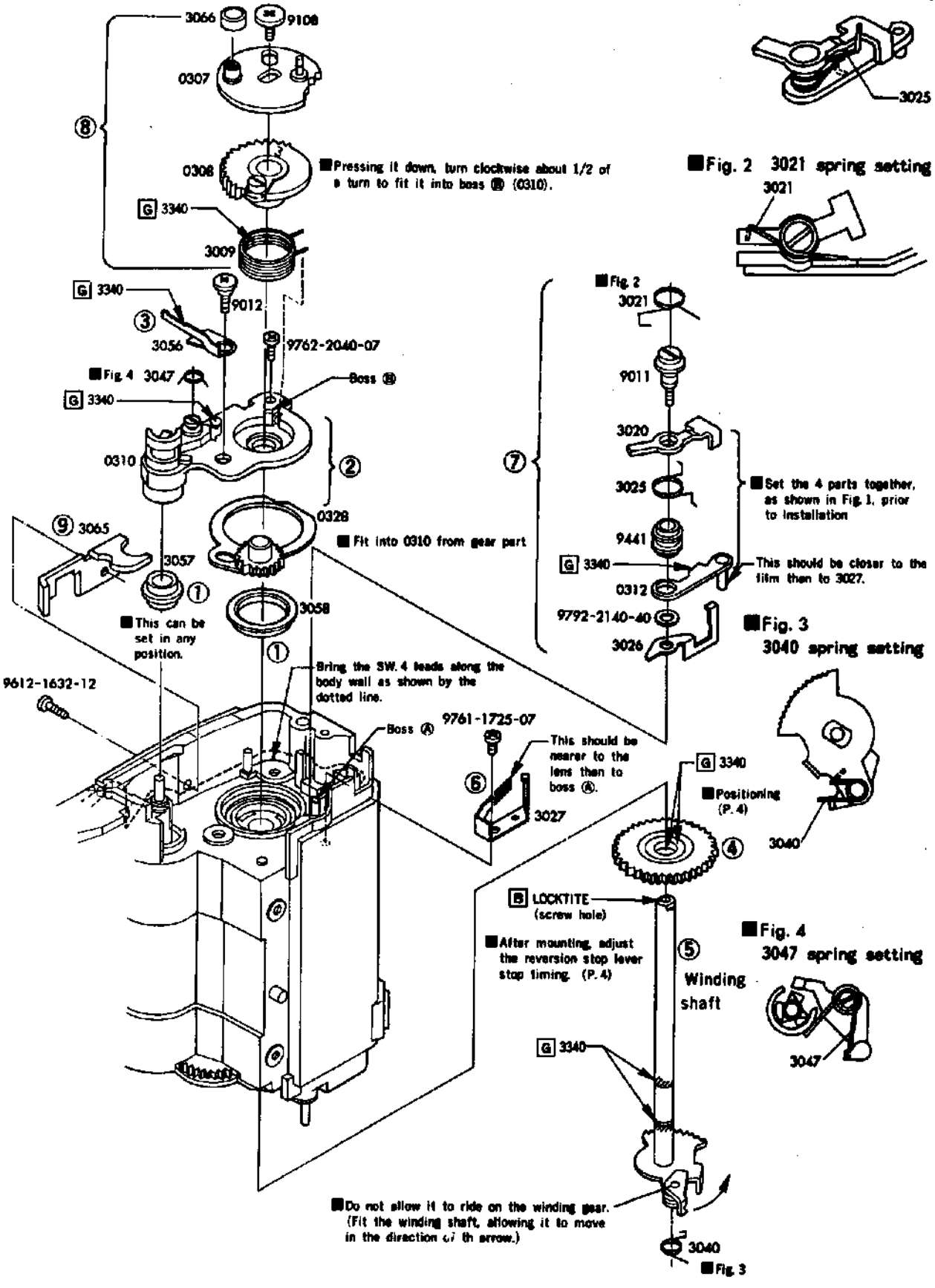
■Fig. 2



1. With the winding idler gear crest fitted in hole ⓐ of winding base plate A and with the sprocket idler gear bottom fitted in hole ⓑ, set the sprocket gear so that the shaft under the sprocket gear is parallel with winding base plate A.
2. Then, put a mark on the tooth of the winding idler at hole ⓐ, as shown in Fig. 2.
   - After marking the winding idler gear, align the mark with hole ⓐ and set the sprocket gear as shown in Fig. 1.

2 Winding shaft

Assemble the parts in the order ①~⑨



■Fig. 1 3025 spring setting

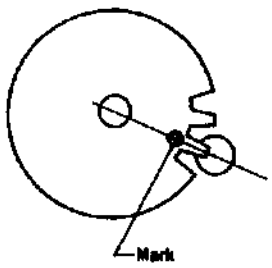
■Fig. 2 3021 spring setting

■Fig. 3
3040 spring setting

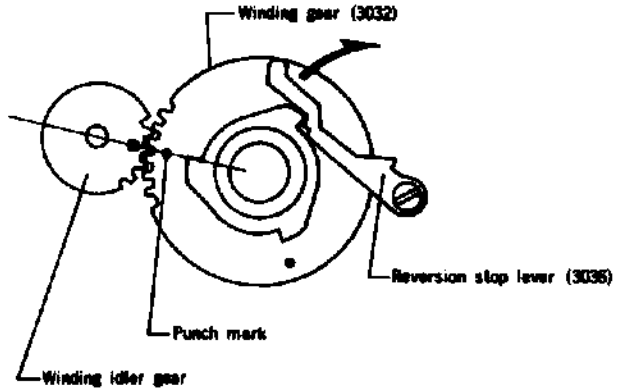
■Fig. 4
3047 spring setting

■ Winding gear positioning procedure

■Fig. 1 Winding idler gear position



■Fig. 2

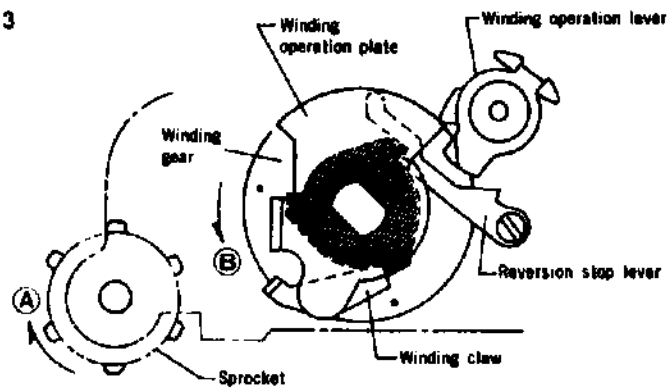


1. Make sure that the winding idler gear is positioned as shown in Fig. 1.
2. Allow 3036 to move in the direction of the arrow, then set the winding gear so that the punch mark of the winding gear is aligned with the mark of the winding idler gear. (Fig. 2)

■ Reversion stop lever stop timing adjustment

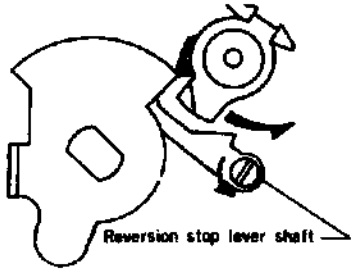
1. Position the winding operation plate as shown in Fig. 3, and temporarily set the winding operation lever.
2. With the winding claw and reversion stop lever fitted into the winding gear as shown in Fig. 3, press the winding operation plate in the direction of arrow Ⓑ while applying a load to the sprocket in the direction of arrow Ⓐ so that the winding claw is set securely onto the winding gear.

■Fig. 3

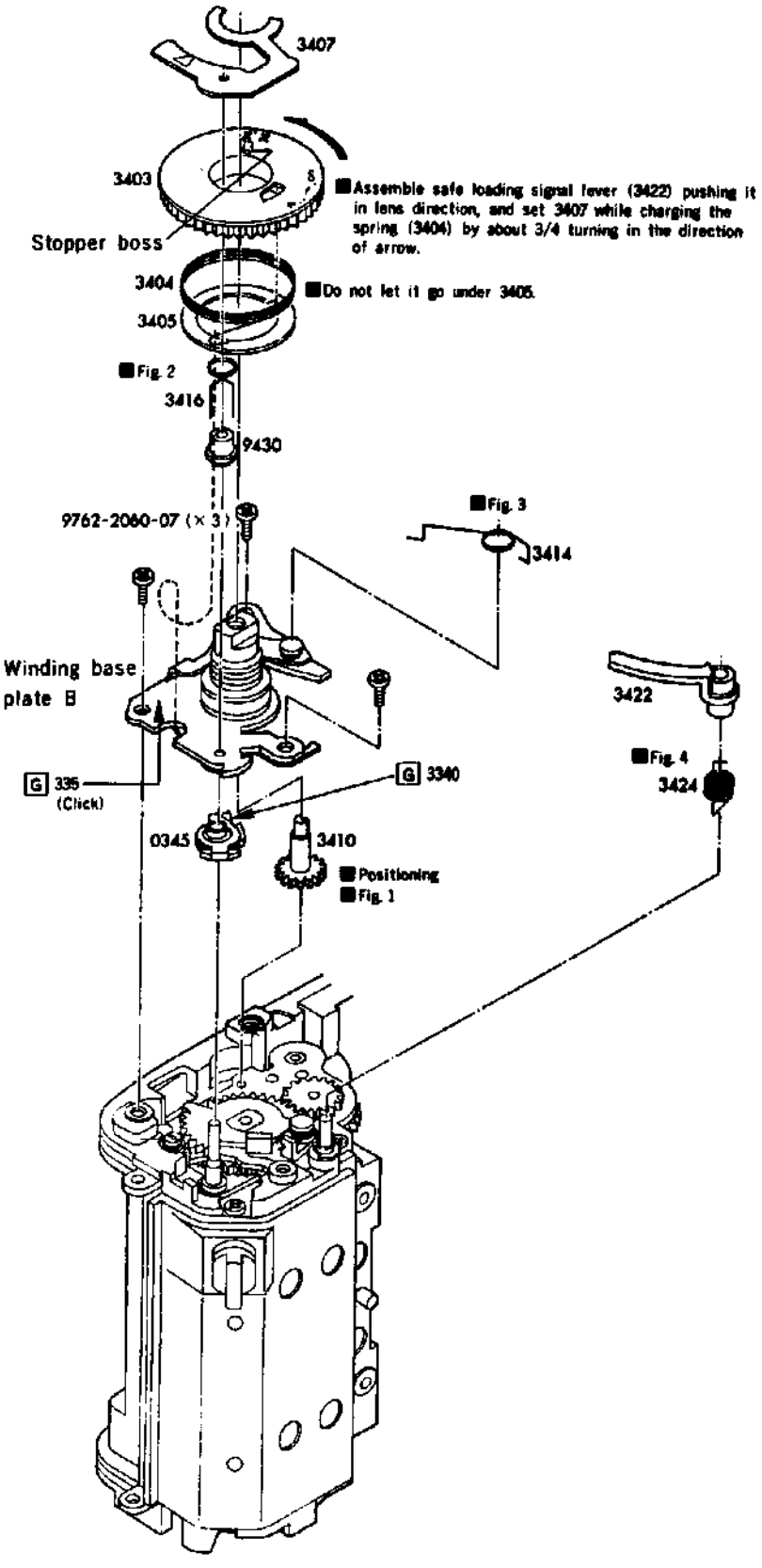


3. Applying a load to the sprocket and winding operation plate as shown by Ⓐ and Ⓑ, turn the reversion stop lever shaft until the winding operation lever is disengaged from the winding operation plate. (Fig. 4)

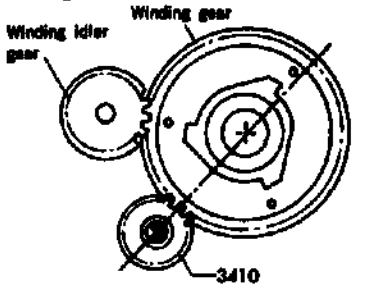
■Fig. 4



3 Winding base plate B

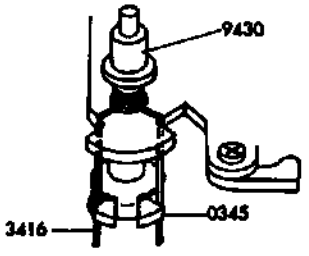


■Fig. 1



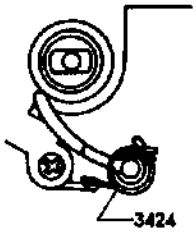
● Make sure that the punch mark of the winding gear is correctly facing the center of the winding idler gear, and then set 3410 so that the V groove is positioned as shown above.

■Fig. 2 3416 spring setting



■Fig. 3 3414 spring setting

■Fig. 4 3424 spring setting

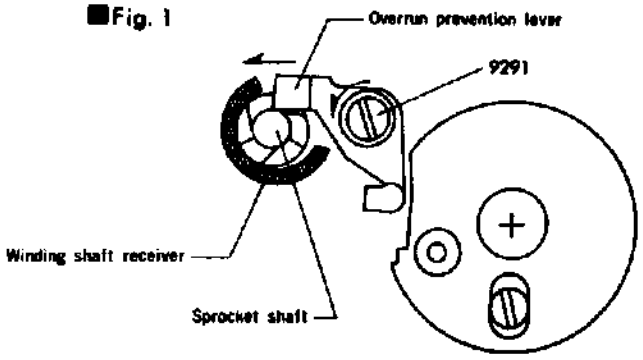


■After completion of the assembly work, mount the film advance lever and carry out the adjustments and checks on P. 6, 7, 8.

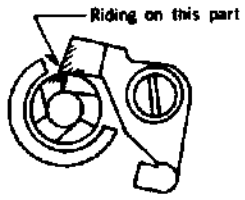
■ Overrun eccentric pin adjustment

1. After winding, hold the film advance lever and turn the eccentric pin (9291) counterclockwise until the sprocket shaft (3052) touches the winding shaft receiver. (Fig. 1)
2. Return the winding lever slightly, and then wind it again to set it in the condition shown in Fig. 2.

■Fig. 1

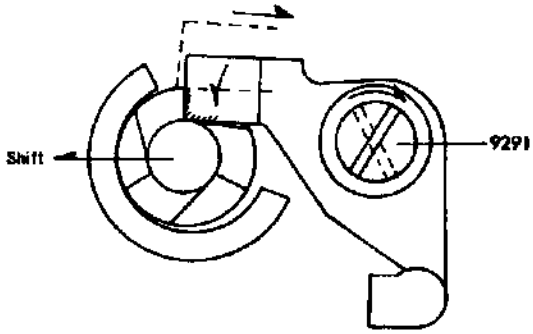


■Fig. 2



3. Then, shift the sprocket shaft by finger toward the body center to set it in the condition shown in Fig. 3, and slowly turn the eccentric pin (9291) clockwise until the overrun prevention lever is engaged with the ratchet of the sprocket shaft.

■Fig. 3



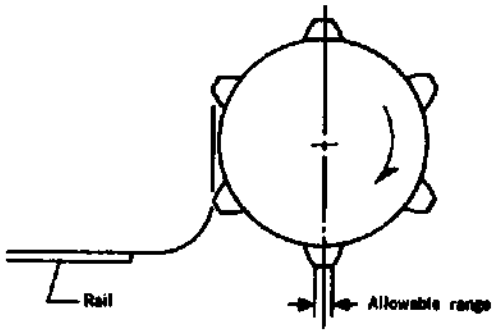
• Checking adjustment : During the winding lever operation, the end of the overrun prevention lever should not be caught by the sprocket claw. After winding is completed, the lever should be engaged with the claw.

■ Winding mechanism check

1 Position of sprocket claws

After winding, hold the winding lever and return the sprocket in the direction of the arrow, as shown in Fig. 1. The sprocket claw positions should then be as illustrated.

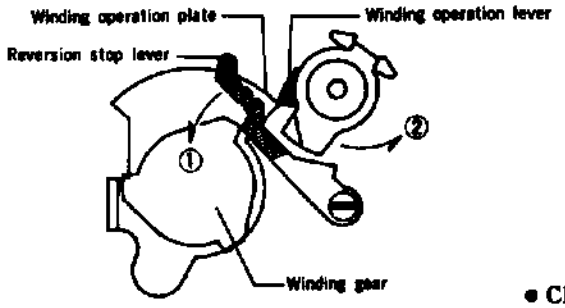
■Fig. 1



2 Reversion stop lever timing

Slowly turn the film advance lever while applying a load to the sprocket. The winding operation lever should disengage from the winding operation plate after (or at the same time) the second step of the reversion stop lever begins to engage with the claw of the winding gear.

■Fig. 2

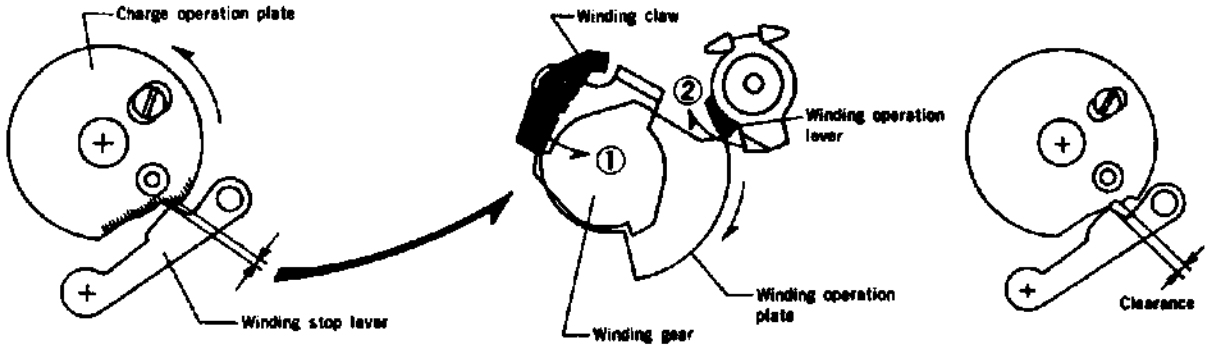


● Check through the clearance of the strap hanger screw.

3 Check and adjustment of winding operation lever timing

- After winding completion, slowly return the film advance lever. The winding stop lever should engage on the 1 st stop position of the charge operation plate. Before it engages on the 2 nd stop position, ① the winding claw and ② the winding operation lever should disengage from the winding operation plate. The order of ① and ② is reversable.
- And also make sure that a clearance should be visible between winding stop lever and charge operation plate after winding stop lever engages with the 2 nd stop position of charge operation plate.

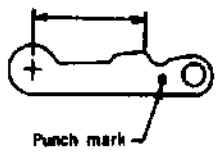
■Fig. 3



If adjustment is not made well as mentioned above, replace winding stop lever with a new one.

(Timing failure of winding operation lever may occur by replacing parts of winding mech. with accumulated tolerance of each part.)

■Fig. 4



Types of winding stop lever-A set

Parts No.	Mark	L(mm)
2017-0312-01	no marked	8.6
2017-0322-01	marked	8.8

■Note:

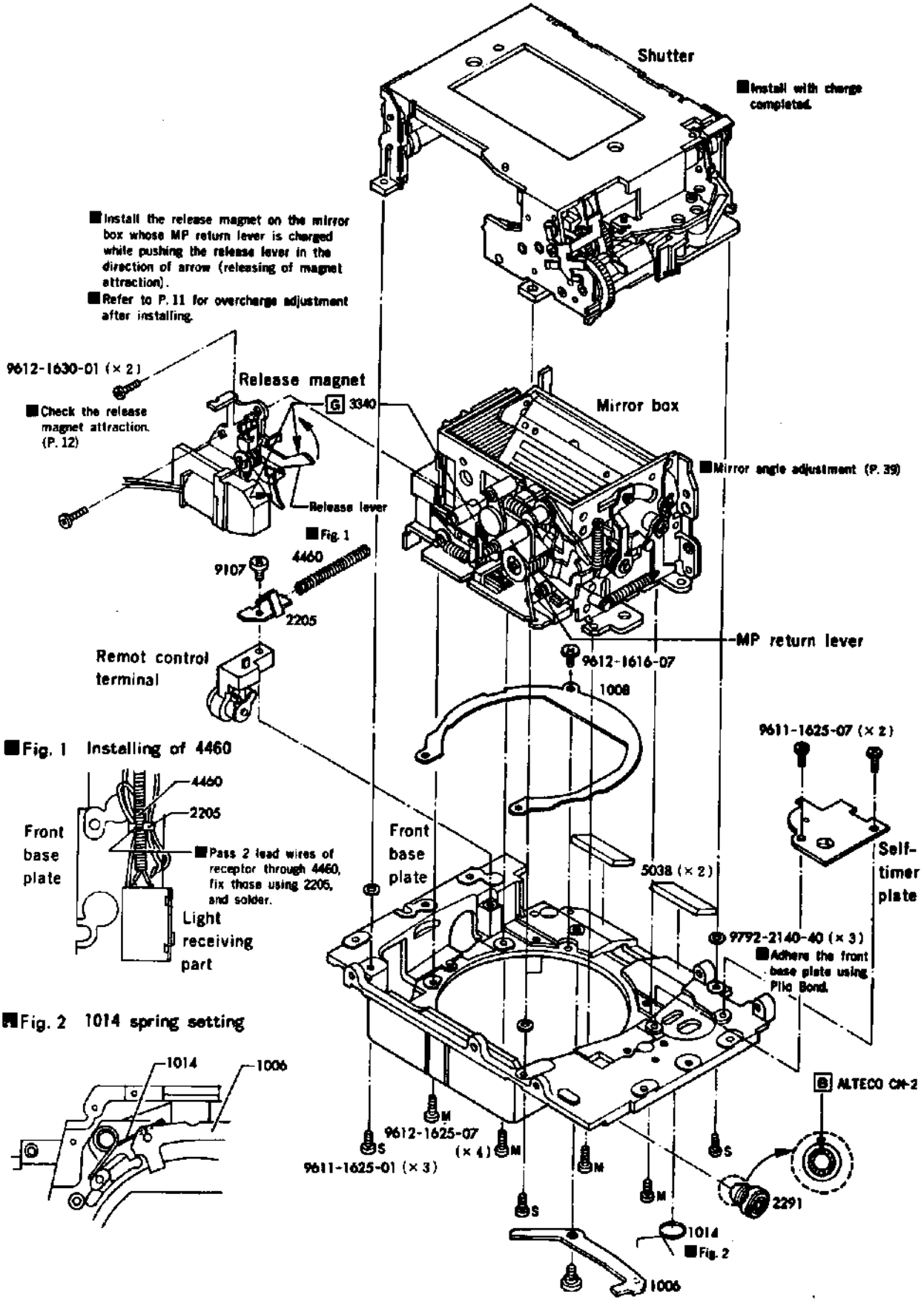
The following symptons may occur by replacing parts of the winding stop lever A-set even timing of winding operation lever is normal.

① The symptom of replacing 0322-01 by 0312-01.
Idle winding may takes place cause of winding claw is not engaged even winding stop lever engaged on 2 nd stop position.

② The symptom of replacing 0312-01 by 0322-01.
Winding stop lever may not engage on the 2 nd stop position or no clearance appears even winding stop lever engaged.

4 Front base plate block assembly-1

■Refer to the arrangement of the lead wires on the next page.



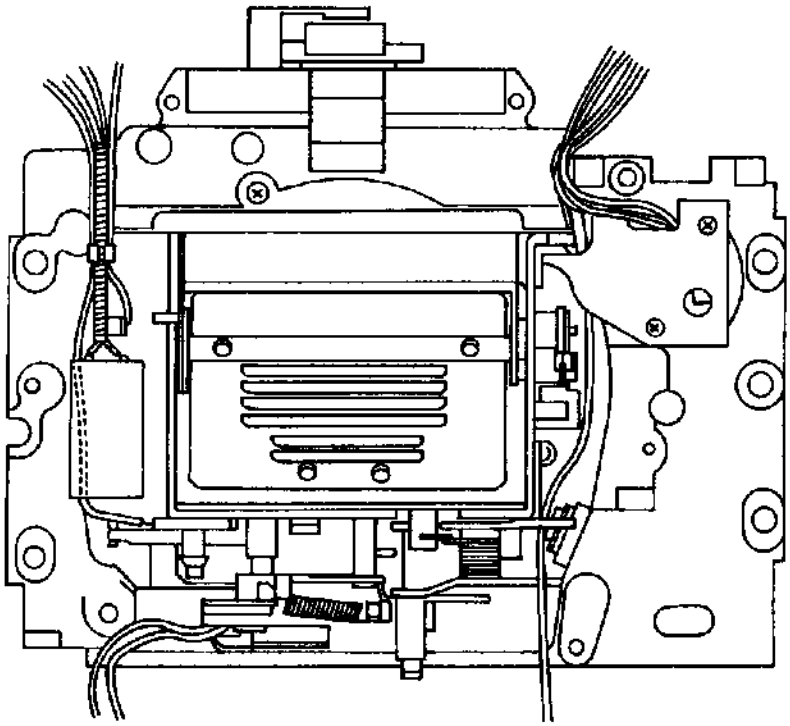
■Fig. 1 Installing of 4460

4460
2205
Front base plate
■Pass 2 lead wires of receptor through 4460, fix those using 2205, and solder.
Light receiving part

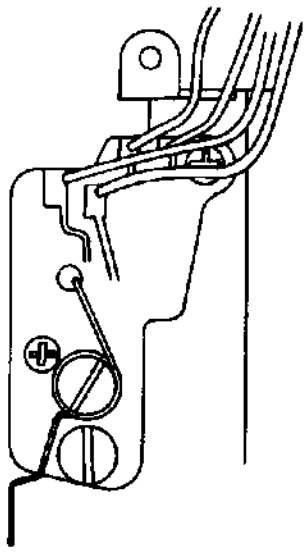
■Fig. 2 1014 spring setting

■ Arragement of front base plate lead wires

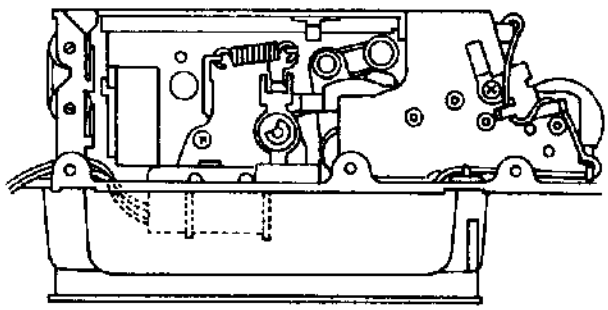
■Fig. 1



■Fig. 2



■Fig. 3

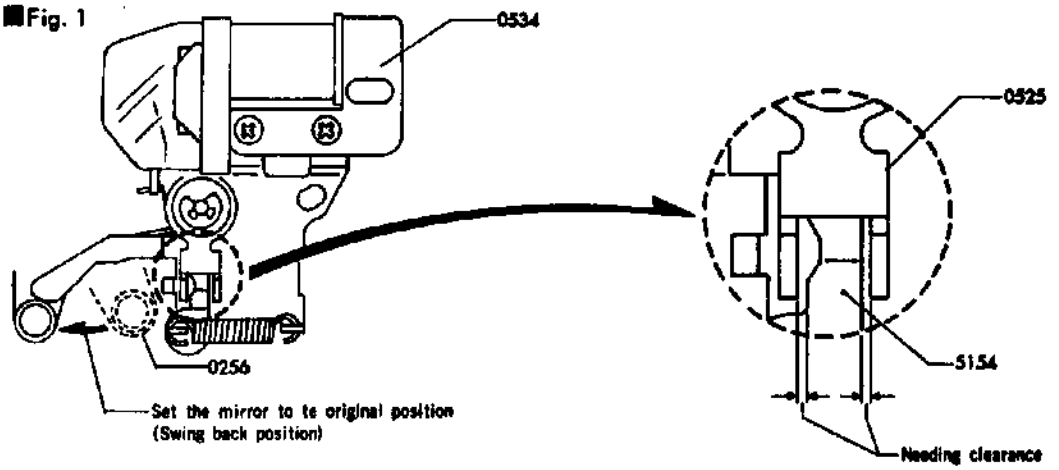


■Check and adjustment of level of the release magnet overcharge

■Adjustment procedure

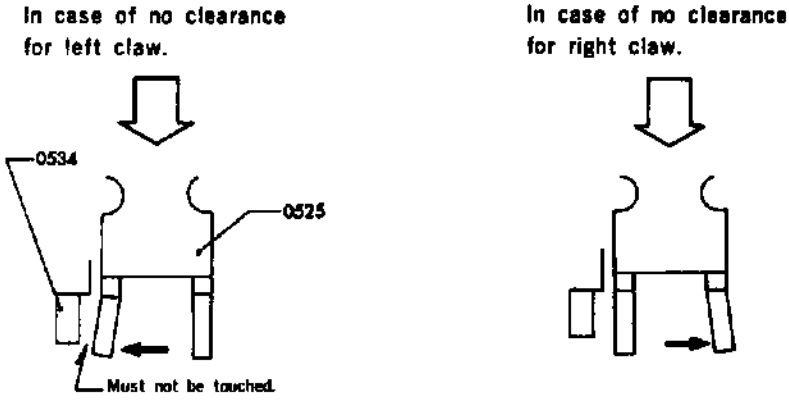
1. Set the release magnet on the mirror box, disengage the MP return lever (0256) stopper, and re-set the mirror to the original position.
2. Make sure 5154 will not touch with claws, right and left, of 0525.
   (There is no necessity to adjust clearance of right and left evenly.)

■Fig. 1



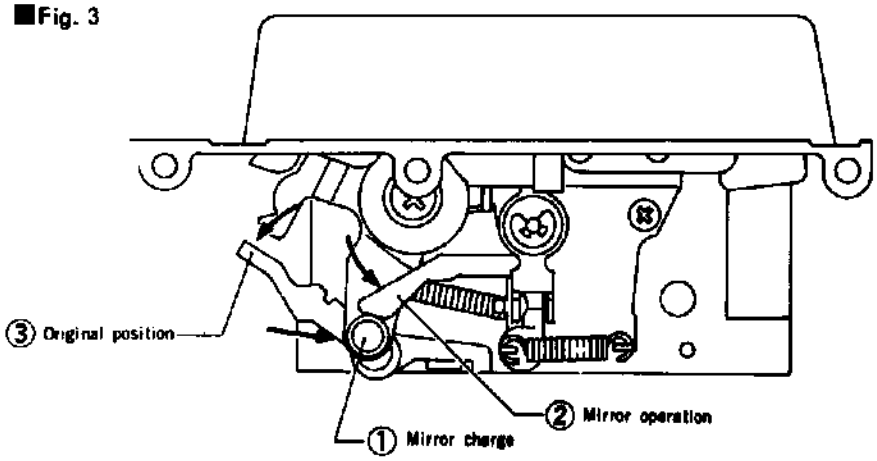
3. If no clearance, adjust it by bending 0525. Then, make sure that left side claw will not be touched with 0534 by excessive bend.

■Fig. 2



4. After adjustment, make sure it operates perfectly by mirror operation in the order of ①~③. If adjustment is insufficient, mirror will be up at the time of winding.

■Fig. 3

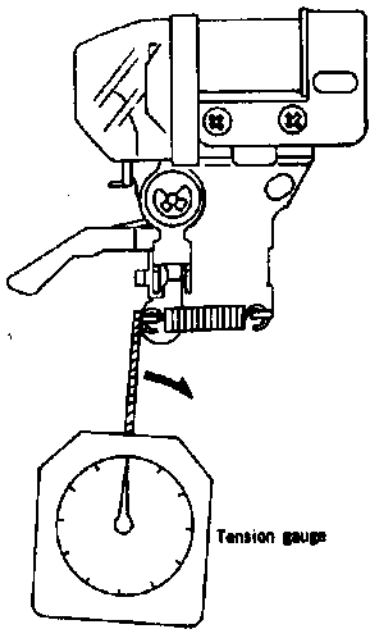


■ Release magnet attraction check

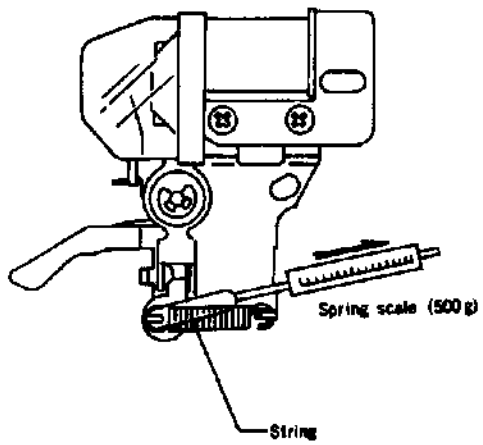
■Measuring instruments : Constant voltage D.C power supply (Model 524B, E-1, E-2)
: Dial tension gauge (500g, 300g)

■Checking procedure

■Fig. 1 Attraction



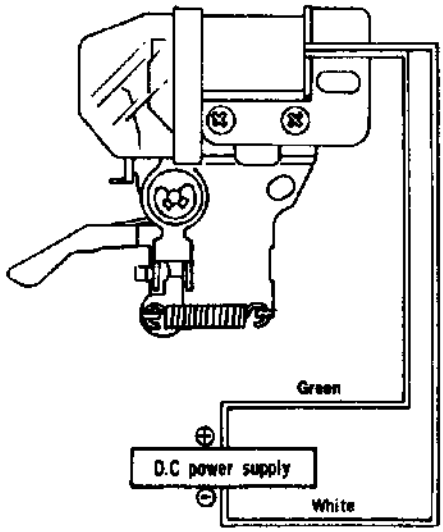
■Fig. 2 Attraction



Standard	150g or more

• Attraction check·····As shown in Fig. 1, set a tension gauge to the release magnet, and then check the value 3 times when the contact piece separates.
(If a tension gauge of more than 270g is not available, a spring scale of about 500g can be used instead as shown in Fig. 2)

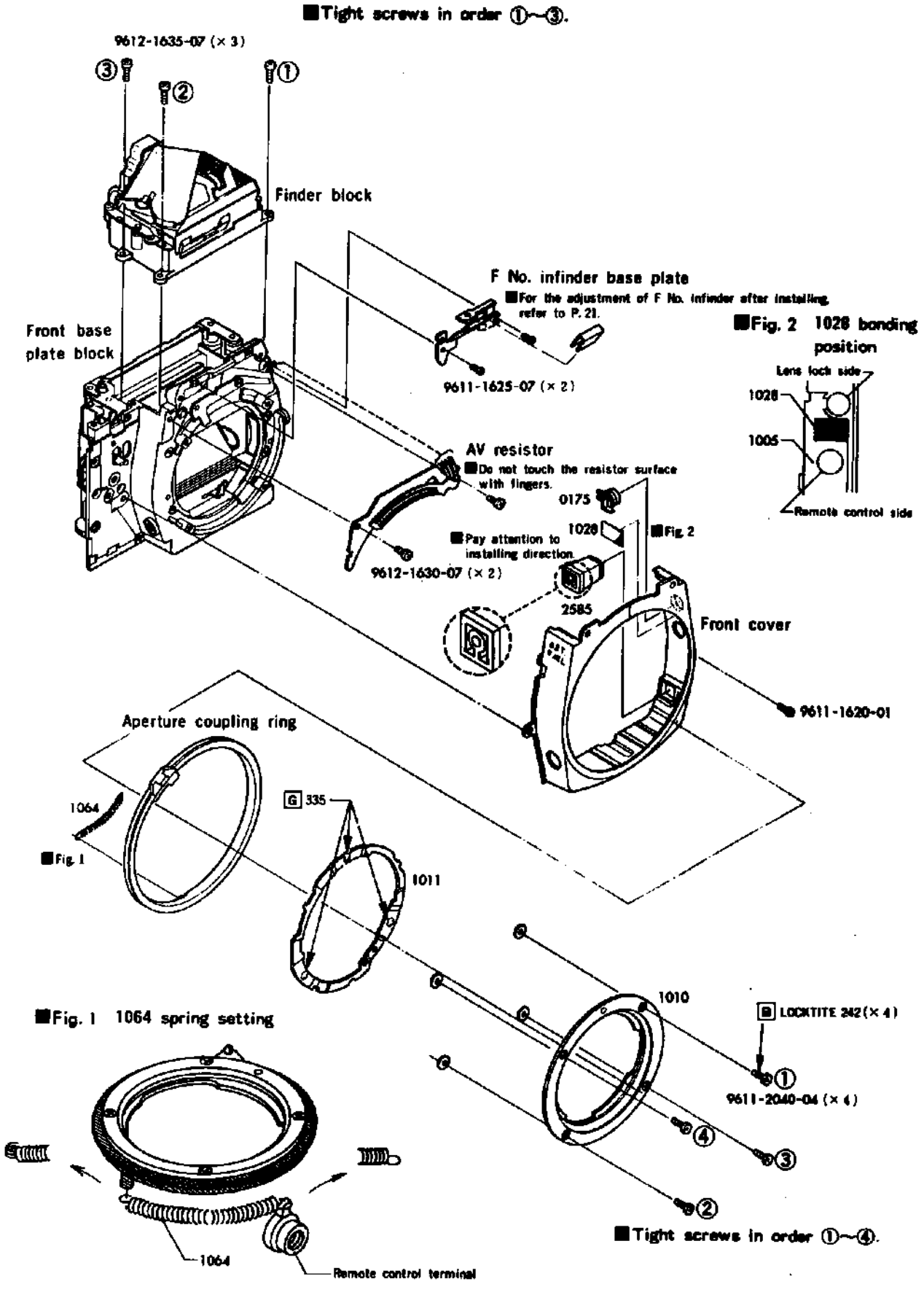
■Fig. 3 Separation voltage



Standard	Separates at 1.8V or less

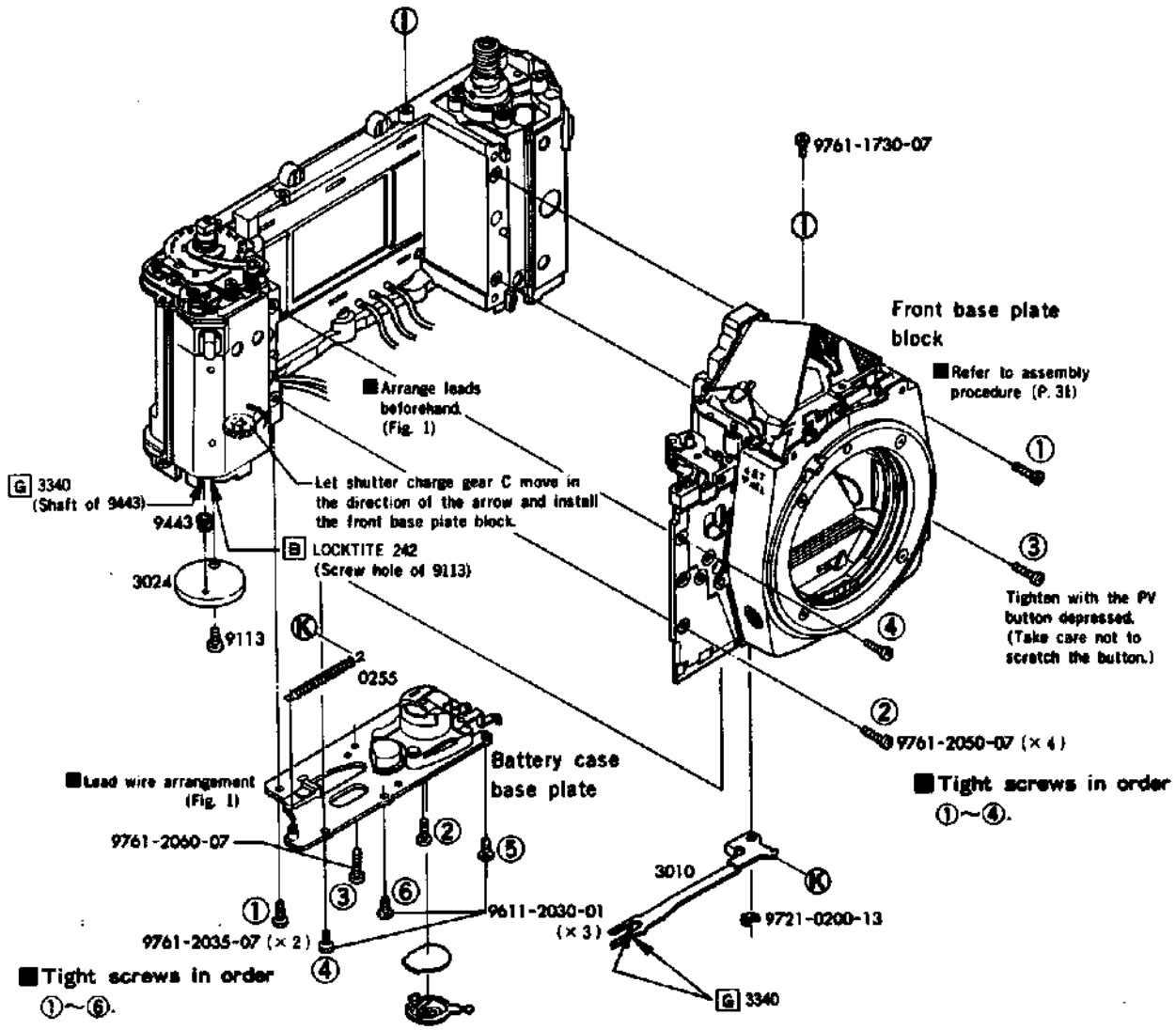
• Separation voltage check···As shown in Fig. 3, connect to a D.C power supply and check to see if the contact piece separates at 1.8V or less.

5 Front base plate block assembly-2

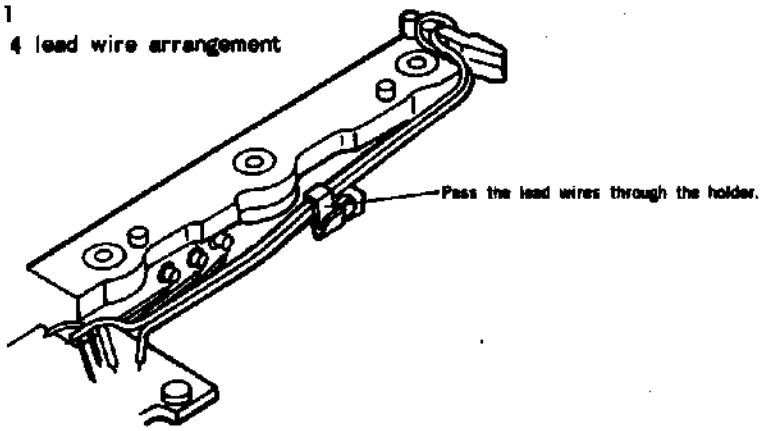


6 Front base plate block assembly

■After completion of assembly, perform the shutter gear position and shutter charge adjustments.
(P. 15, 16)


9761-1730-07
Front base plate block
■Refer to assembly procedure (P. 31)
■Arrange leads beforehand. (Fig. 1)
G 3340 (Shaft of 9443)
9443
Let shutter charge gear C move in the direction of the arrow and install the front base plate block.
B LOCKTITE 242 (Screw hole of 9113)
3024
9113
0255
Tighten with the PV button depressed. (Take care not to scratch the button.)
9761-2050-07 (×4)
■Tight screws in order ①~④.
■Lead wire arrangement (Fig. 1)
Battery case base plate
9761-2060-07
9611-2030-01 (×3)
9761-2035-07 (×2)
3010
9721-0200-13
G 3340
■Tight screws in order ①~⑥.

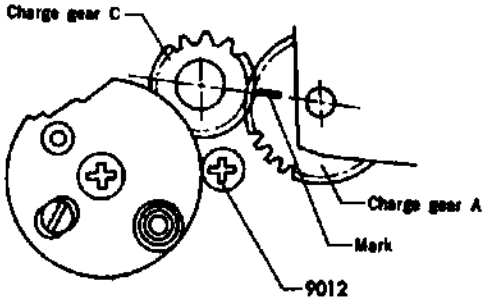
■Fig. 1
SW. 4 lead wire arrangement



■ Shutter gear position adjustment

1. Engage the gears so that the mark of charge gear A faces the center of charge gear C, and tighten 9012. The gear engagement clearance should be 0.1~0.2 mm.

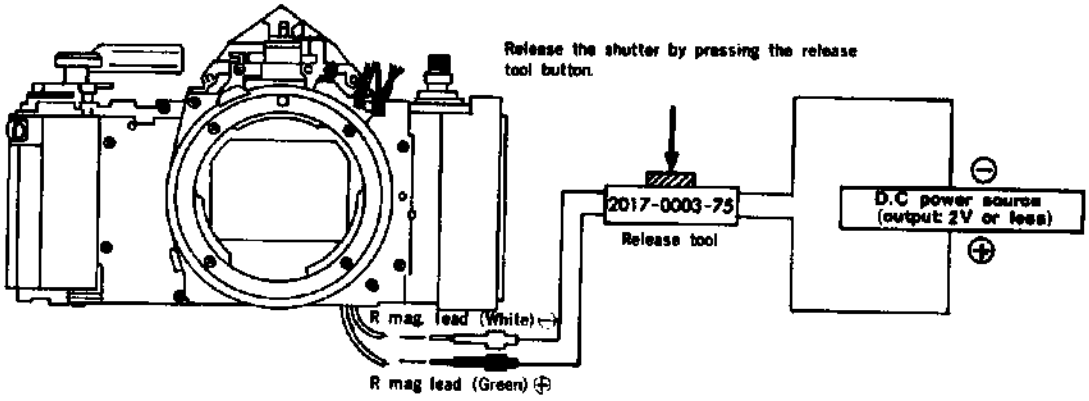
■Fig. 1



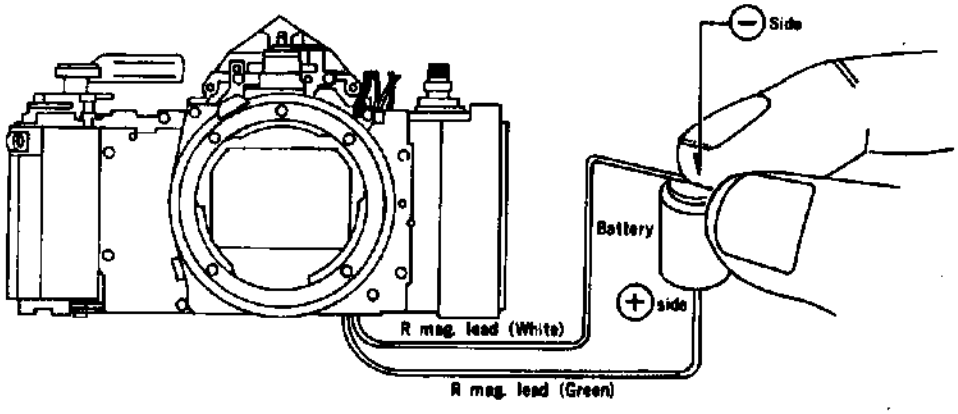
■ Shutter release procedure

■In this camera, the mirror operation mechanism is started with the separation of the release magnet (R Mag). Therefore, after mounting the shutter block on the body, the shutter cannot be released unless the flexible P.C board is installed with the wiring completed. For this reason, the shutter should be released by the following method when performing any checking or adjustments, such as for winding, mirror box, shutter release, etc., after assembling the front base plate block as shown on P. 14.

[1] By using a release tool (2017-0003-75)


Release the shutter by pressing the release tool button.
2017-0003-75
Release tool
D.C power source (output: 2V or less)
R mag. lead (White)
R mag lead (Green)

[2] By using a battery

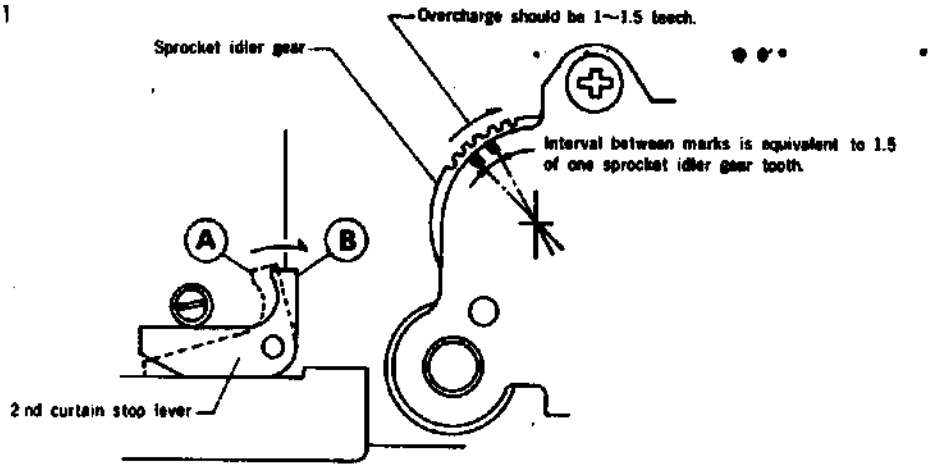


■Caution : In both methods [1] and [2], supply power until the completion of shutter operation. (Otherwise the shutter tester may fail to give a correct indication.)

■ Shutter charge adjustment

1. Slowly turn the film advance lever and check the over-charge from the time the 2 nd curtain is stopped (the 2 nd curtain stop lever moves from Ⓐ to Ⓑ, as shown below) until the film advance lever stops by checking the movement of the sprocket idler gear.

■Fig. 1

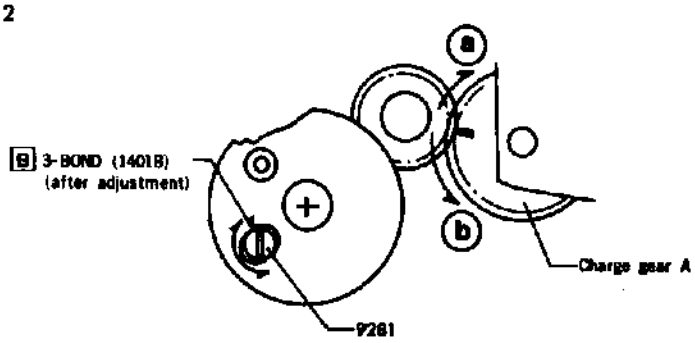

Overcharge should be 1~1.5 teeth.
Sprocket idler gear
Interval between marks is equivalent to 1.5 of one sprocket idler gear tooth.
A
B
2 nd curtain stop lever

Caution: If the winding operation is not smooth, or if the overcharge exceeds two teeth, immediately stop winding and adjust.

■Adjustment procedure

- Overcharge is less than 1 tooth·····Turn the eccentric pin (9281) counterclockwise.
- Overcharge is over 1.5 teeth ·····Turn the eccentric pin (9281) clockwise.

■Fig. 2

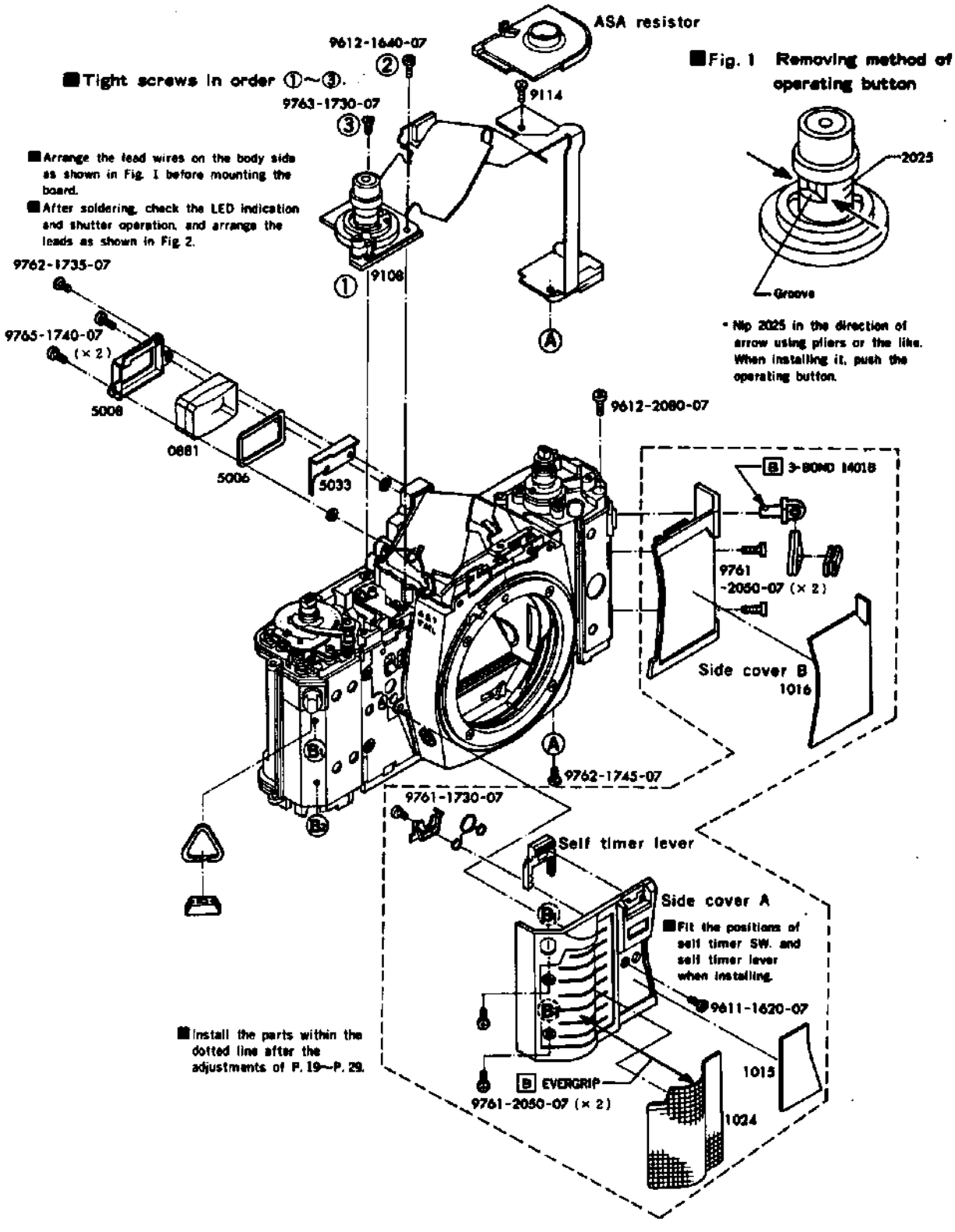


- If the adjustment by the eccentric pin is not sufficient, shift charge gear A by one tooth. (In the case of an undercharge, shift it in the direction of ⓐ, and in the case of an overcharge, in the direction of ⓑ, as shown in Fig. 2.)

7 Flexible P.C board installation

■After installing the flexible P.C board and soldering the lead wires, carry out the adjustment of P. 19~29.

■If the shutter block has been disassembled, adjust it before mounting the circuit board. (P. 36)



■Fig. 1 Removing method of operating button

* Nip 2025 in the direction of arrow using pliers or the like. When installing it, push the operating button.

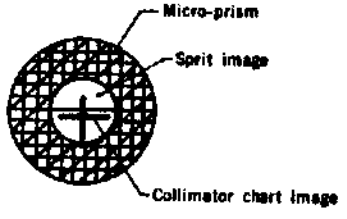
■ Viewfinder back adjustment

■Measuring instruments : 1000 mm collimator (Model RC-1000 Ⅰ, Ⅱ, Ⅲ)
: Master lens for 054 finder back adjustment (054-5202-79)
: Magnifier

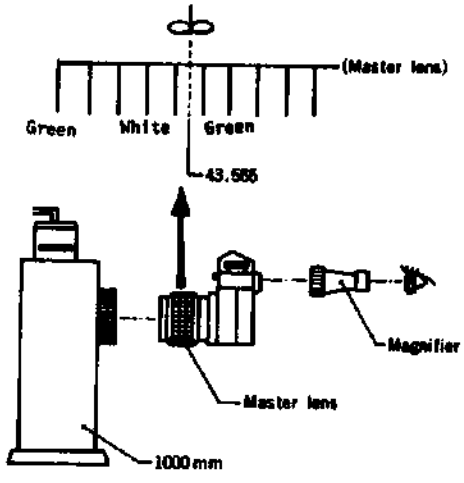
■Adjustment procedure

1. Set the camera so that the chart image is as shown in Fig. 1, and set the scale of the master lens to 43.565.
   • After setting the master lens, turn it counterclockwise to put aside the looseness to one side.

■Fig. 1

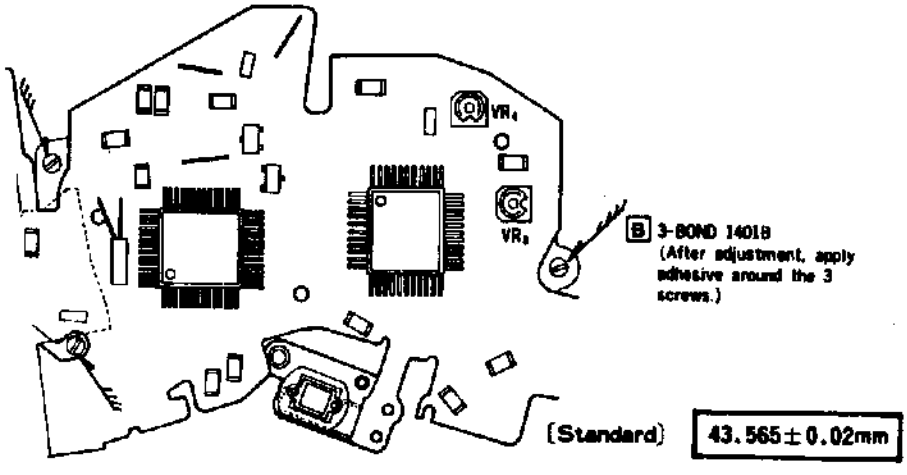


■Fig. 2



2. Make sure that the scale of the master lens is positioned as shown in Fig. 2, and move the 3 adjusting screws of Fig. 3 up and down uniformly to adjust the vertical line of the chart image.

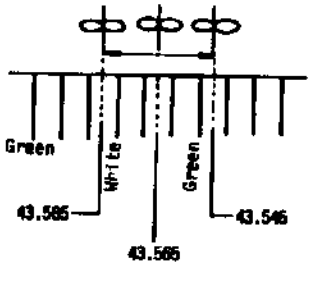
■Fig. 3



   • If the microprism is partially obscure, adjust the vertical balance by using the screws, taking care not to deflect the vertical line of the chart image.

3. When the helicoid of the master lens is turned to adjust the focus after operating the shutter several times, the scale position of the master lens should be as follows:

■Fig. 4 Allowable range

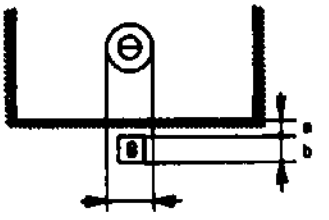


■ F No. infinder adjustment

[Standard]

Frame position	Height	$0 < a \leq b$
	Width	Within microprism
Aperture value	Should be within frame; adjust letter should be invisible at F5.6.	

■Fig. 2

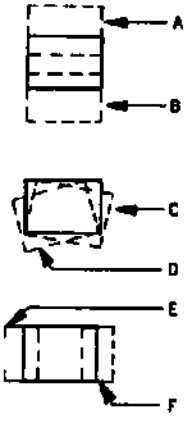


■Adjustment procedure

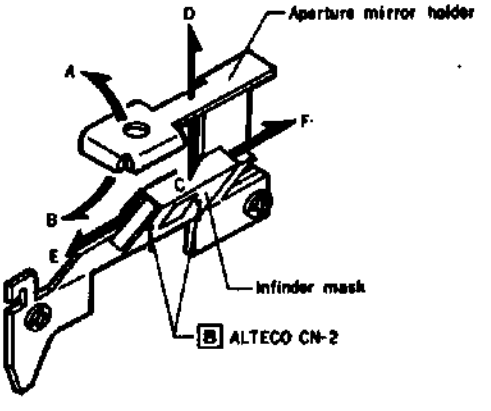
1. Check for deflection, as shown in Fig. 3, and adjust by bending (shifting) the aperture mirror holder and infinder mask in the directions A~F shown in Fig. 4.

■Fig. 3

(Normal position is shown by thick lines.)



■Fig. 4

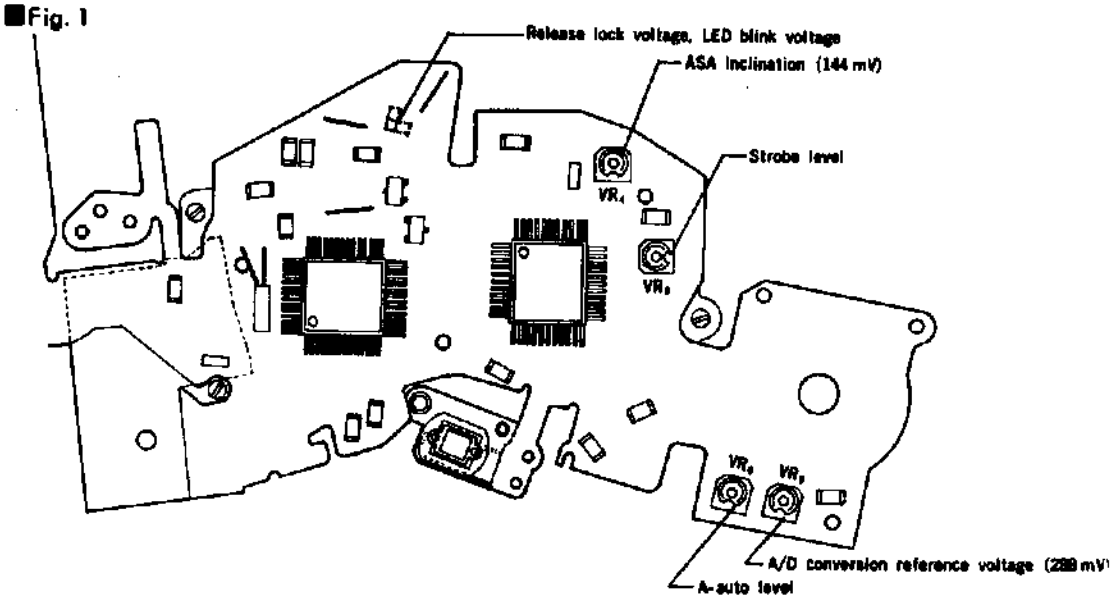


● If the infinder mask is shifted, apply ALTECO CN-2 to it later.

■ Exposure adjustment

■Resistor positions and adjustments

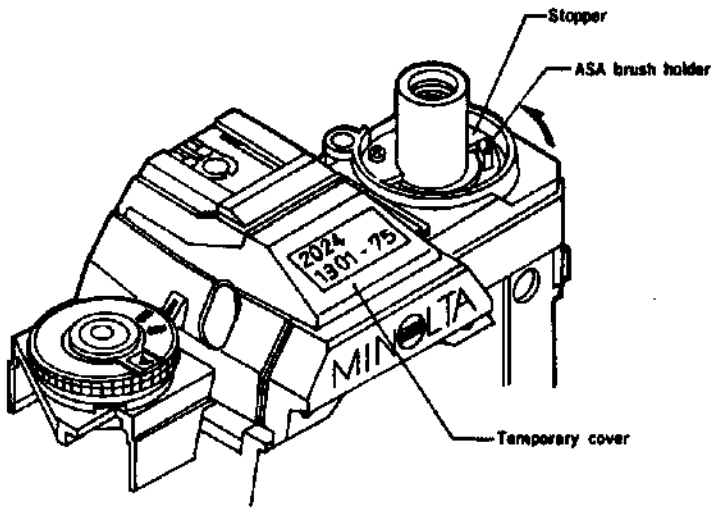
■Fig. 1



■ASA 100 setting method

Rotate the ASA brush holder in the direction of the arrow until ASA 100 is at the position of the temporary cover stopper.

■Fig. 2



1 Adjustment of ASA inclination

■Measuring instrument : Digital multimeter (Type 2508, 3476, 2507)

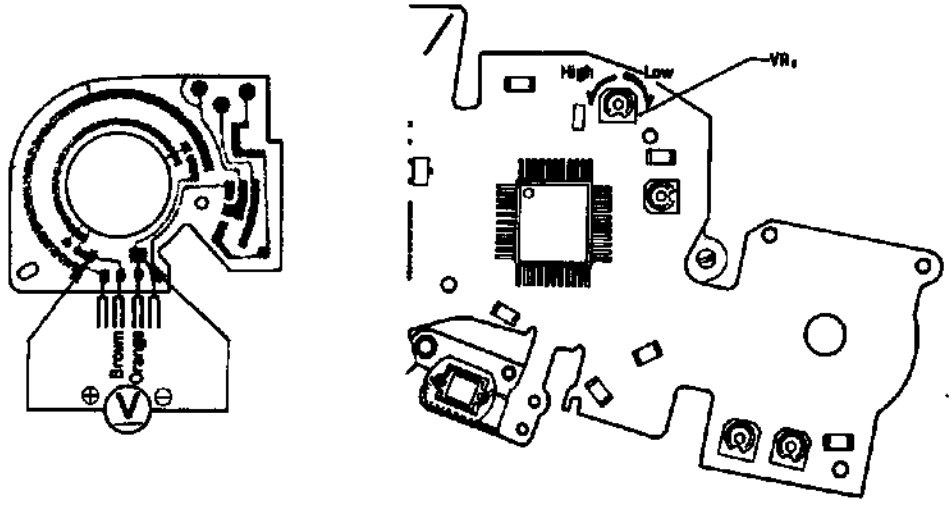
■Adjustment procedure

1. Set the metering switch to ON and adjust by turning VR_4 so that the voltage at the point in Fig. 1 is **144±2mV** (In case of 25°C room temperature)
   Depending on the temperature when adjusting, use the table below to get adjustment voltage.

■ Fig. 1

(Adjustment voltage)

Temperature (°C)	15±2.5	20±2.5	25±2.5	30±2.5
Adjustment voltage (mV)	139±2	141.5±2	144±2	146.5±2



2 Adjustment of A/D conversion reference voltage

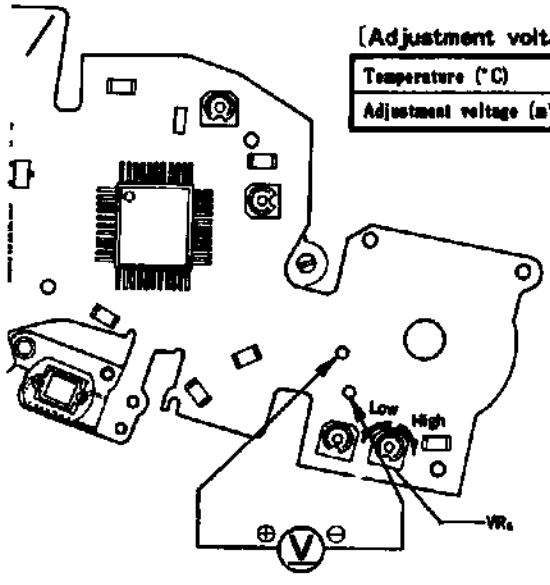
■Measuring instrument : Digital multimeter (Type 2508, 3476, 2507)

■Adjustment procedure

1. Set the metering switch to ON and adjust by turning VR_5 so that the voltage at the point in Fig. 2 is **288±3mV** (In case of 25°C room temperature)
   Depending on the temperature when adjusting, use the table below to get adjustment voltage.

(Adjustment voltage)

Temperature (°C)	15±2.5	20±2.5	25±2.5	30±2.5
Adjustment voltage (mV)	278±3	283±3	288±3	293±3



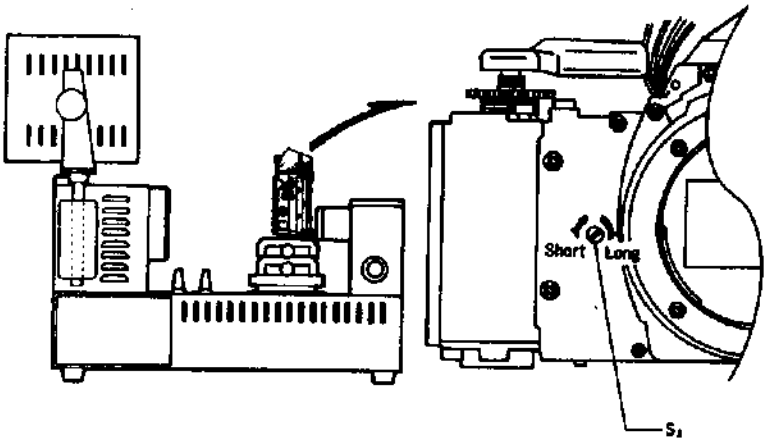
3 Adjustment of manual SS

■Measuring instruments : Shutter tester (Model S-2101, FS-1DMN4)

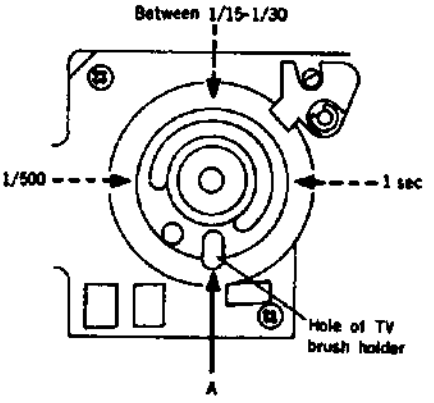
■Adjustment procedure

- For adjustment, use a temporary cover. If not, adjust the position of TV brush holder referring to Fig. 2.

■Fig. 1



■Fig. 2 Relation between shutter speed and hole of TV brush holder position



1. Shutter speed adjustment and check (see the table below)

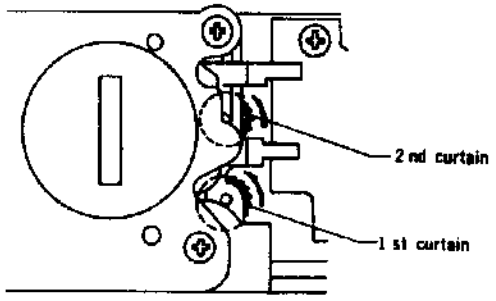
Step	Item	Part adjusted	Adjustment (check)	Remarks
①	1/1000 curtain speed check	—	(Both 1 st & 2 nd curtains are within 13 ms.)	If it is more than 13 ms or less than 10 ms, adjust the 2 nd curtain speed.
②	1/1000 adjustment	S_3 eccentric pin	0.98 ms	—
③	1/60 check	—	(16~18.5 ms)	
④	X time lag	—	(Range A : 0.4 ms or more) (Range B : 2.4 ms or more)	Check it with SS 1/60 and if is defective, perform the adjustment on P.36.

- When the exposure unevenness at steps ②~③ is over 0.3 EV in both B-A and B-C ranges, and over 0.4 EV in the A-C range, adjust the curtain speed as follows.
- For the shutter speed standard, refer to the inspection standard.

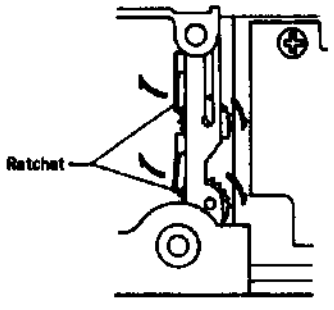
2. Curtain speed adjustment

Adjust by turning the ratchet so that the 1 st and 2 nd curtain speeds are 11 ± 0.3 ms at 1/1000.

■Fig. 3 (Increasing the curtain speed)



■Fig. 4 (decreasing the curtain speed)



- Remove the battery case base plate while pushing ratchet to release the ratchet claw and the rachet return.
  (Do not return it completely.)
- Return it sufficiently and adjust by slowly increasing the curtain speed.

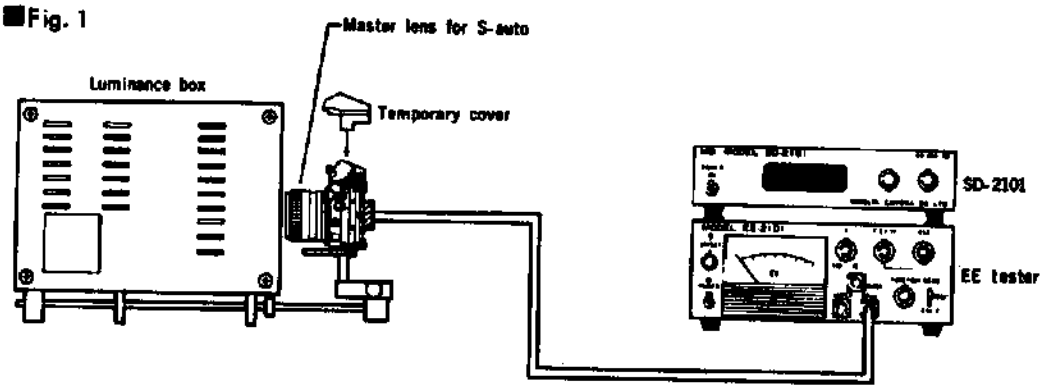
4 Adjustment of A-auto level, check of LED indication

■Measuring instruments : Luminance box (Model L-2101, L-222, L-223)
: EE tester (Model EE-2101, EE-2111)
: SS adaptor for EE tester (Model SD-2101)
: Master lens for S-auto (2005-0001-75)
: Temporary cover (2024-1301-75)

■Adjustment procedure

1. Set the camera and measuring instruments as follows.
   • After setting the master lens, turn it counterclockwise to put aside the looseness to one side.

■Fig. 1



• Luminance box
K value : 1.2
※Luminance : EV 10, 15

• Camera
Shutter dial : A
ASA : 100

• Master lens
Aperture : F 5.6
Distance : ∞

• EE tester
K value dial : 1.2
ASA dial : 100

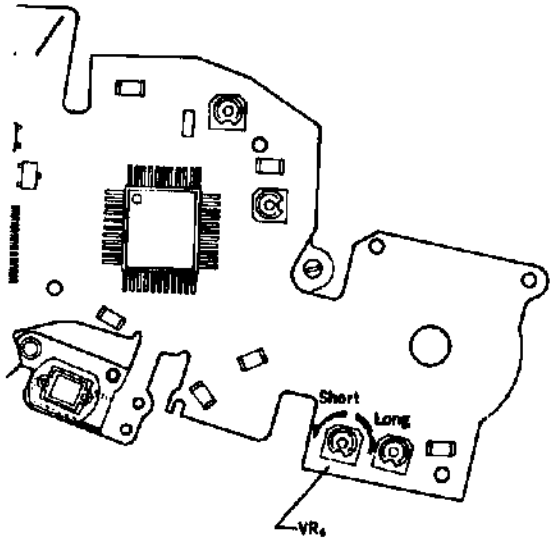
• SD-2101
Aperture switch : F 5.6
Luminance switch : Same as luminance box.

※When using luminance box (L-222 or L-223), set it at EV 11, and use a ND filter (MINOLTA ND 50% FOR ADJUSTMENT).

2. Adjust and check as follows:

Step	Luminance	Shutter speed adjustment	EE level allowable range	Part adjusted	Indication allowable range (±0.5EV)			
1	EV 10	34 ms	—	VR₈ (Fig. 2)	1/60	☼	■	■
					1/30	☼	☼	☼
					1/15	■	■	☼
2	EV 15	—	±0.4EV	(Check only)				

■Fig. 2



5 Adjustment of strobe level

A Adjustment by luminance box (Model L-2101)

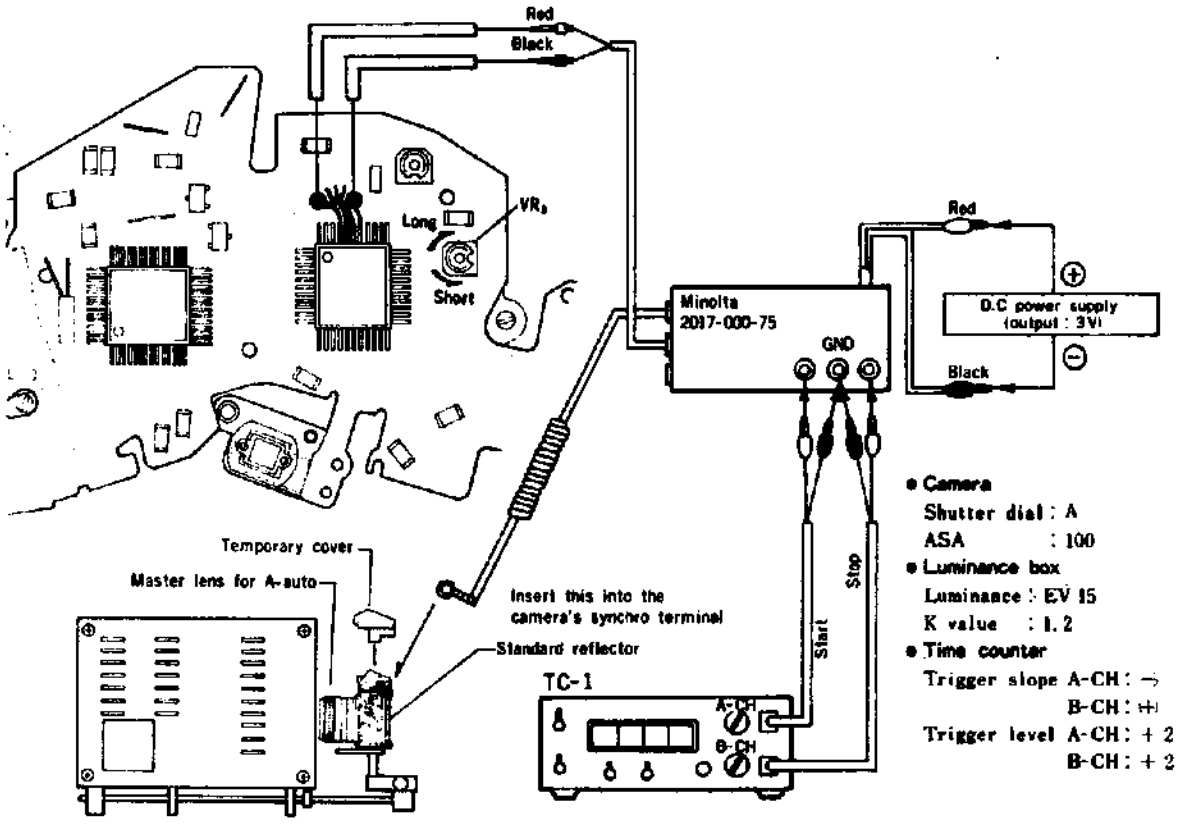
- The Model L-2101 luminance should be used. However, ones with color temperatures ranging from 2600K to 3000K (measured value of the Minolta color meter) at EV 15 can also be used.
- Luminance boxes with long-wavelength cut filters and lamps with cold mirrors cannot be used because of measuring errors. (Ex. Model L-223)
- When no luminance box is used for the adjustment, employ method B on the next page.

■Measuring instruments : Luminance box (Model L-2101)
: Strobe level adjuster (2017-0001-75)
: Standard reflector (2017-0002-75)
: Temporary cover (2024-1301-75)
: Master lens for A-auto (2005-0002-75)
: Constant voltage D.C power supply (Model 524B E-1, E-2)
: Digital time counter (Model TC-1)

■Adjustment procedure

1. Solder the measuring lead wires (2 wires) to the camera and connect the measuring instruments as follows:
   - After setting the master lens, turn it counterclockwise to put aside the looseness to one side.

■Fig. 1



2. With the shutter released, adjust by turning VR_2 so that the indication of the time counter is $0.63^{+0.06}_{-0.15}$ ms

ⒷAdjustment by strobo tester (Model ST-Ⅲ)

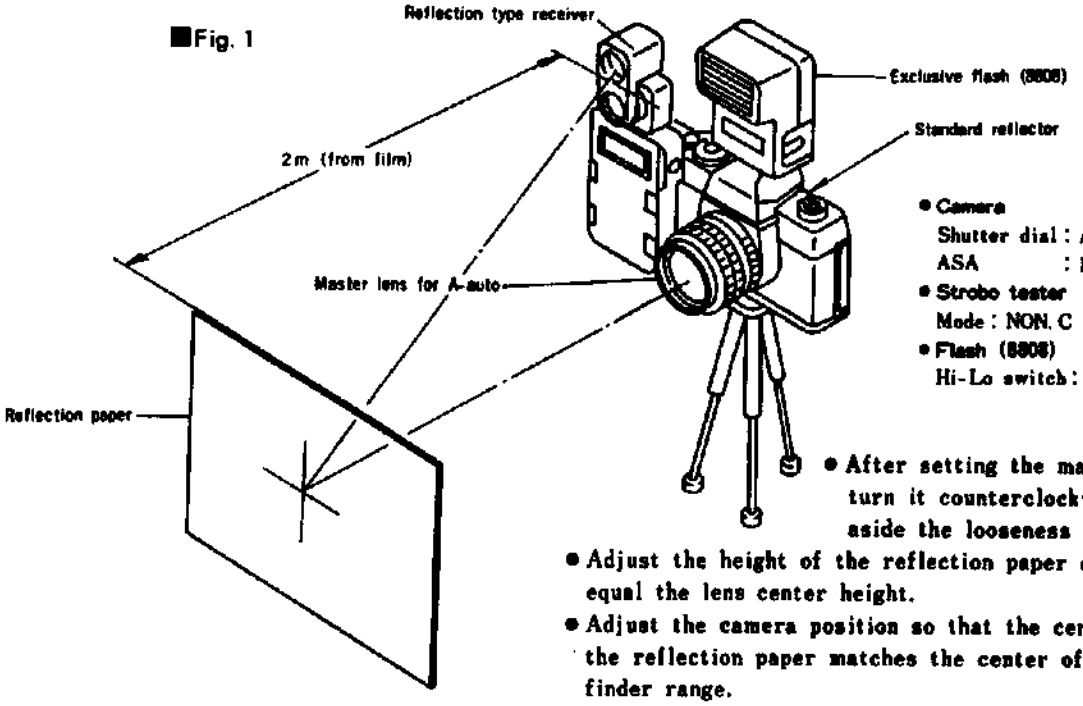
Model ST-Ⅰ and Ⅱ cannot be used because non-cord adjustment is impossible.

■**Measuring instruments** : Strobo tester (Model ST-Ⅲ)
: Standard reflector (2017-0002-75)
: Master lens for A-auto (2005-0002-75)
: Temporary cover (2024-1301-75)
: Reflection paper (1.3 m×2 m)…used for adjustment of Minolta AEF series.
: Exclusive flash (AEF 280PX…Code No. 8808)

■**Preparations**

Connect 4 lead wires for sync of temporary cover to the body. And set the measuring instruments as shown below.

■Fig. 1

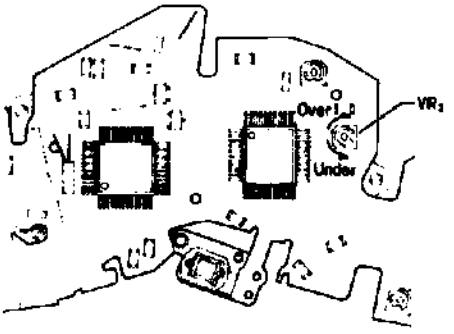


- After setting the master lens, turn it counterclockwise to put aside the looseness to one side.
- Adjust the height of the reflection paper center to equal the lens center height.
- Adjust the camera position so that the center of the reflection paper matches the center of the viewfinder range.

■**Adjustment procedure (darken the room to eliminate the influence of external light)**

1. Set the flash main switch to ON, and 30 sec. or more after the pilot lamp illuminates, look into the viewfinder of the strobo tester (shown above) from near the flash, and then direct the eyepoint of the view center to the center of the reflection paper. Next release the camera shutter and read the indication of the strobo tester.
2. If the indication of the strobo tester is not within **F 5.6±0.5EV**, adjust by turning VR_3. (Fig. 2)

■Fig. 2



About the standard reflector:

- Do not stain the reflector by touching it with the hand, etc., or correct measurement will not be possible.
- When the reflection surface is exposed to light, a color change occurs causing changes in the reflection factor. It must be replaced with a new one about once a year. The reflection paper can be replaced; reflection paper is available for this purpose. When placing an order, specify reflection paper for 2017-0002-75.

■ Check and adjustment of release lock voltage and LED blink voltage

■Check

[1]Release lock voltage	Standard	2.46±0.1V
[2]LED blink voltage	Standard	2.56±0.1V

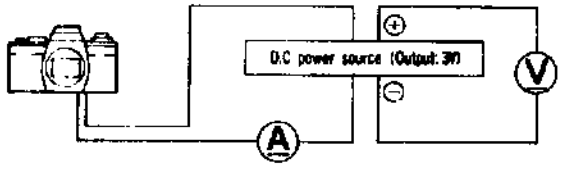
• In case of out of standard above, adjust those as following procedure.

■Measuring instruments : Constant voltage D.C power source (MODEL 524B, E-1, E-2)
: Digital multimeter (Type 2508, 3476, 2507)
: Direct current tester

■Checking procedure

1. Check the current consumption at B setting (incl'd * indication) using measuring instruments as follows.

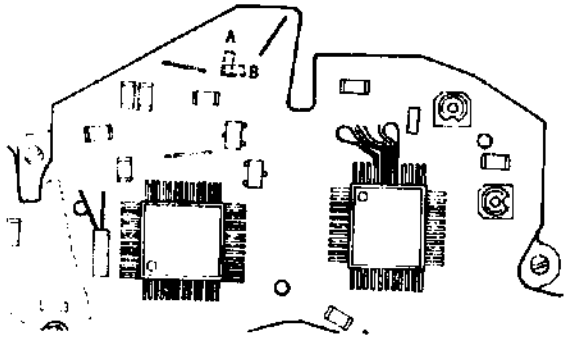
■Fig. 1



• Camera
Shutter dial : B
Touch SW : ON
Connection of power source : ⊕···Battery case contact
⊖···Batter case base plate

2. Measure the release lock voltage while reducing slowly the voltage of D.C power source from 3V.
3. Choose a proper resistor (R_{11}) for B.C from the graph (next page) according to measured value (Checking procedure 1 & 2), and solder it on portion A or B in Fig. 2.
• Note···Measuring temperature should be within the range of 25±5°C.

■Fig. 2



■ Checking high and low shutter speed limits

■Measuring instrument : Shutter tester (Model S-2101, FS-1DMN4)

[1]High shutter speed limit (shutter speeds in other than high luminance operation in A mode.)
• Check the shutter speed with the shutter dial set to A.

Standard	0.69~1.38ms

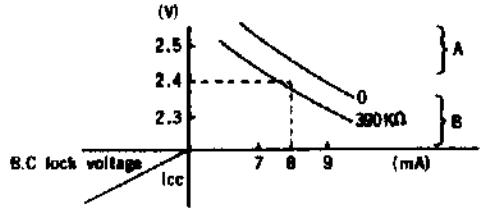
[2]Low shutter speed limit (shutter speeds in other than low luminance operation in A mode.)
• Set the shutter dial to A, and then check the exposure time with light to the receiver interrupted.

Standard	Within 5 sec.

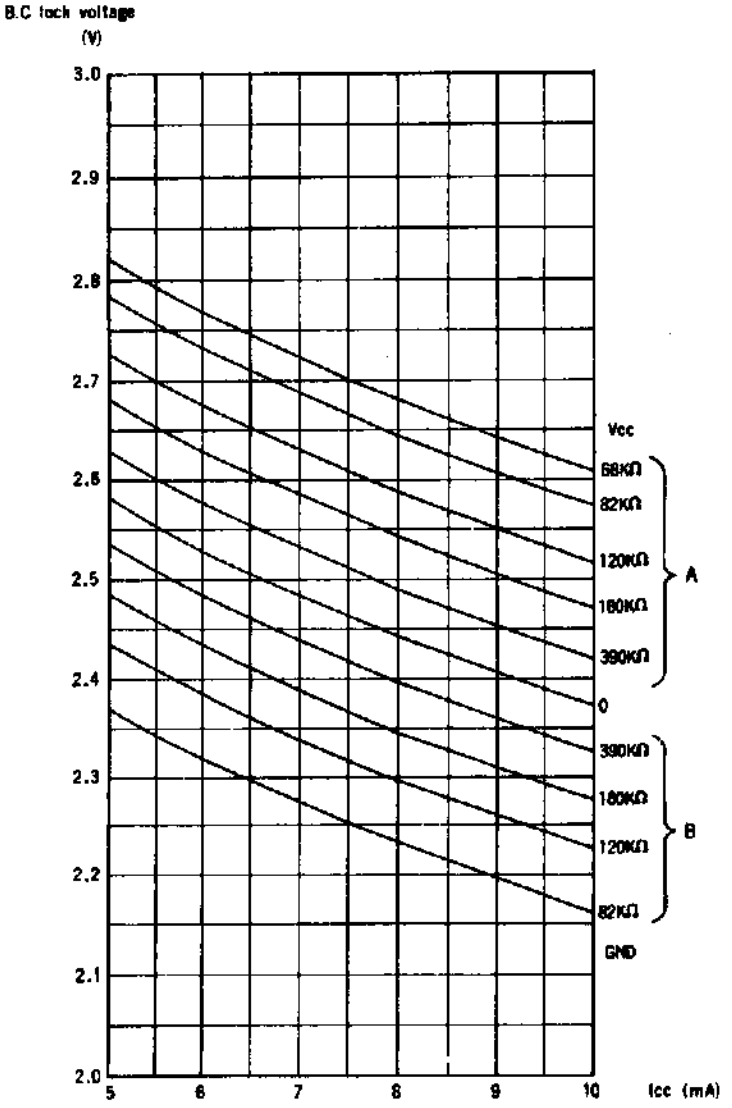
■To obtain R_{11} value from the graph.

1. Read the value of current consumption from the axis of abscissas.·····(abscissa)
2. Read the release lock voltage from the axis of ordinates.·····(ordinate)
3. From the crossing point between 1 (abscissa) and 2 (ordinate), find the nearest slanting line, whose resistance value and soldering position (A or B) are what you need.

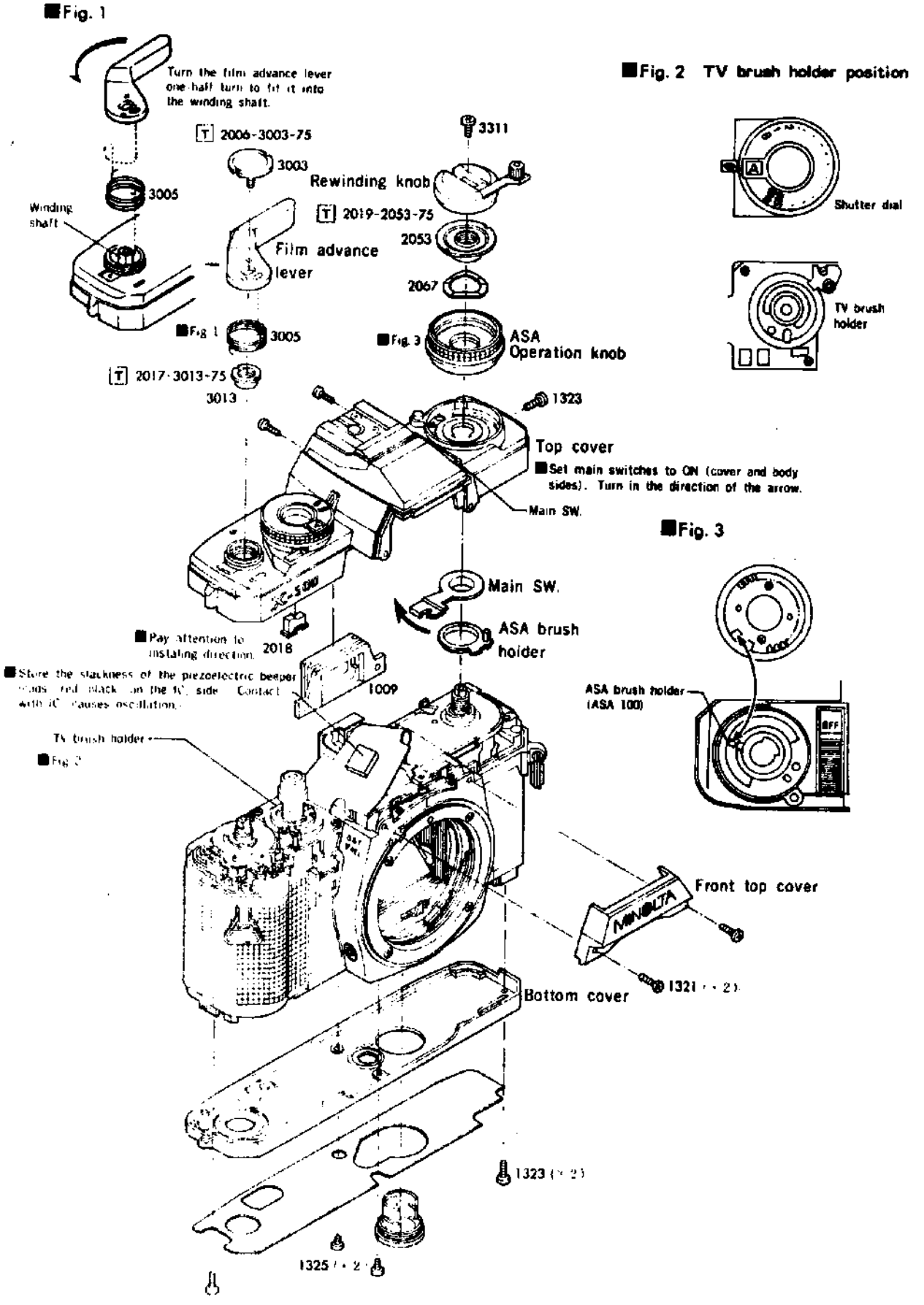
(e.g) Current consumption (abscissa) : 8 mA
Release lock voltage (ordinate) : 2.4 V
From the crossing point in the graph, R_{11} : (390 KΩ) and its soldering position : B can be obtained.



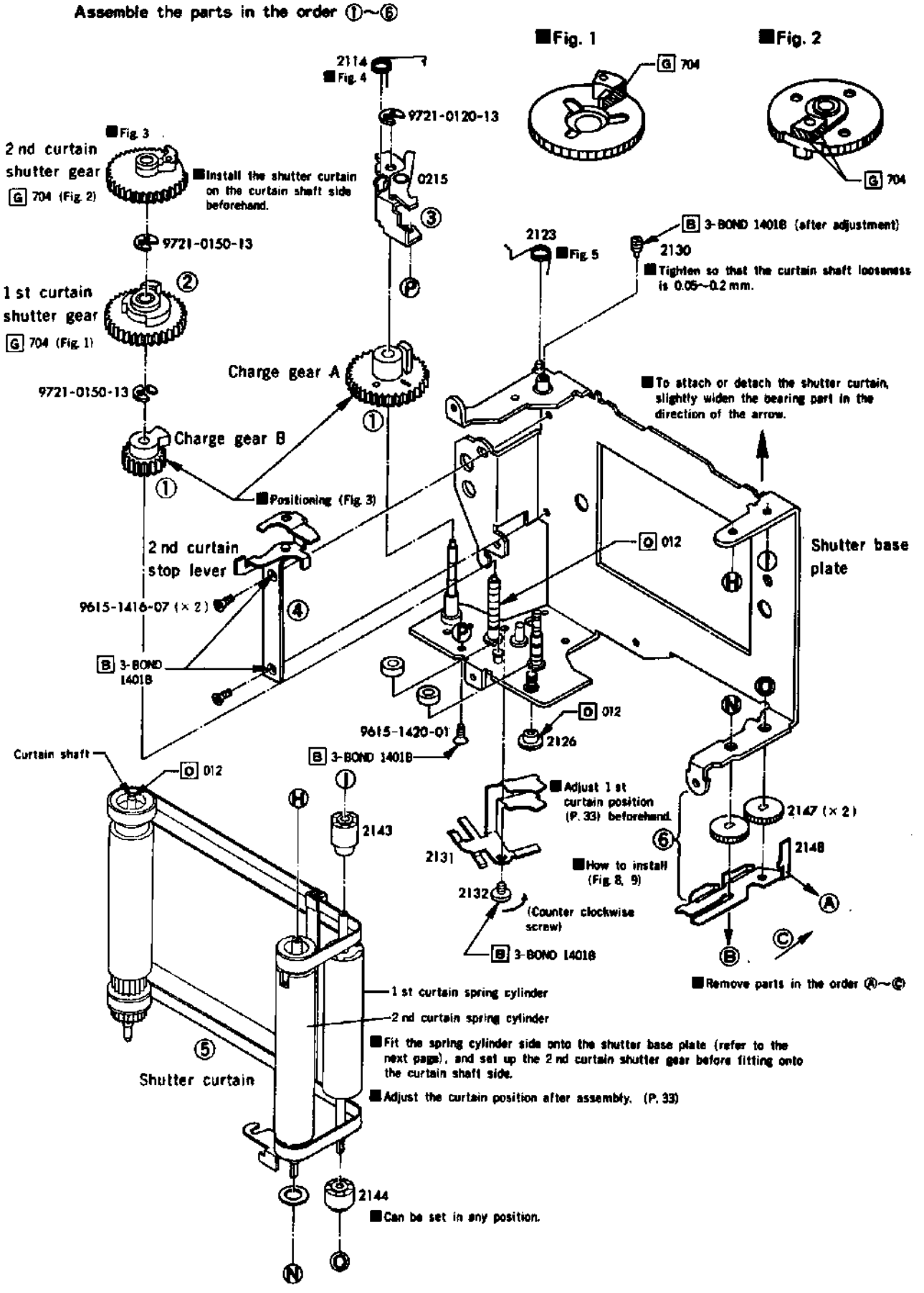
■Graph



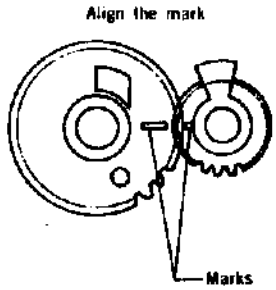
8 External parts (completion)



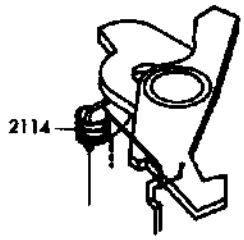
■ Shutter assembly- I



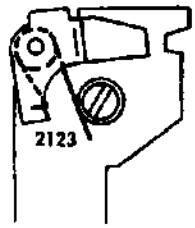
■Fig. 3 Charge gear positioning



■Fig. 4 2114 spring setting



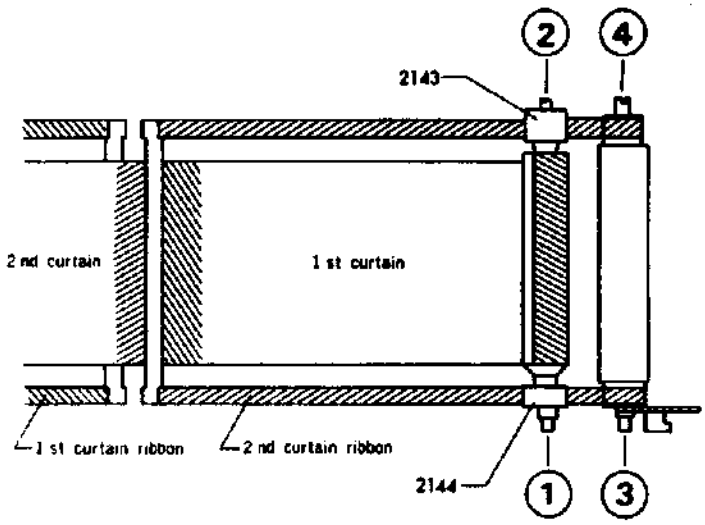
■Fig. 5 2123 spring setting



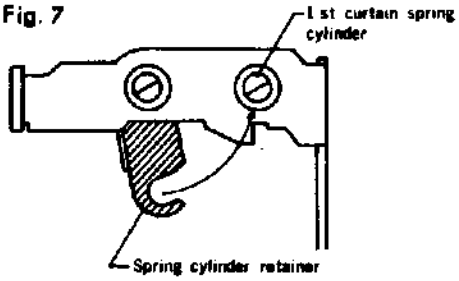
■ Shutter curtain mounting procedure (SP cylinder side)

1. Arrange the shutter curtains as shown in Fig. 4 and fit them in the holes of the shutter base plate in the order ①~④. When fitting in ④, slightly widen the bearing part of the shutter base plate.

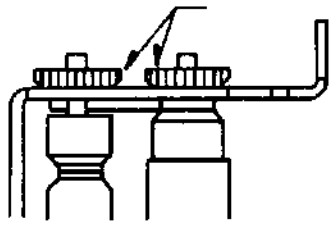
■Fig. 6



■Fig. 7

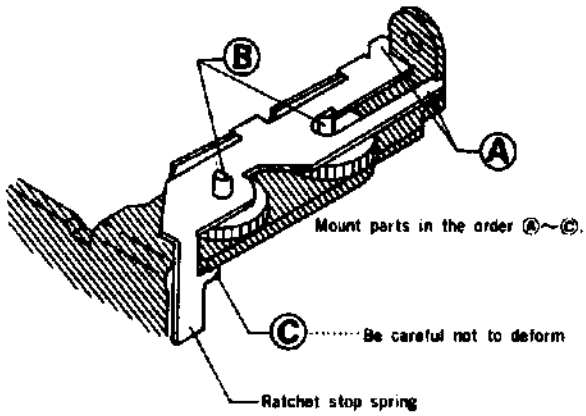


■Fig. 8



2. Fit the curtain spring retainer into the 1st curtain spring cylinder by turning it in the direction of the arrow shown in Fig. 5.
3. Set the ratchet in the correct position (Fig. 8), and attach the ratchet stop spring. (Fig. 9)

■Fig. 9

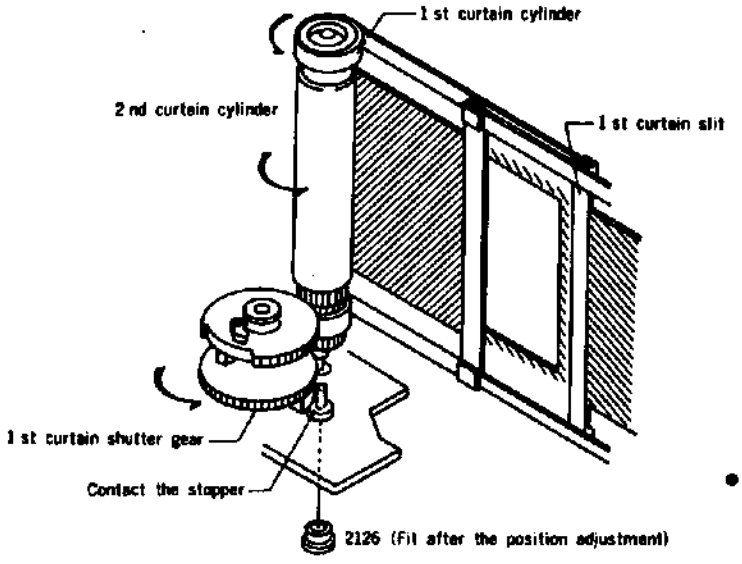


4. Charge the curtain spring by 6 turns for the 1st curtain and 4 times for the 2nd curtain.

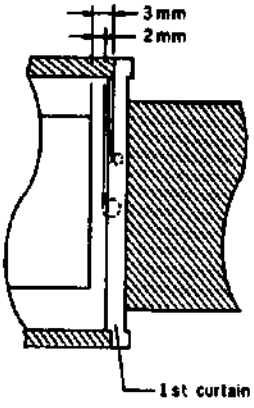
■ 1st curtain position adjustment

1. Turn the 2nd curtain cylinder to stop the 2nd curtain halfway. (Fig. 1)
2. Turn the 1st curtain shutter gear counterclockwise until it touches the stopper. Then turn the 1st curtain cylinder counterclockwise to position the 1st curtain slit as shown in Fig. 2.

■Fig. 1



■Fig. 2 1st curtain position (with its travel completed)



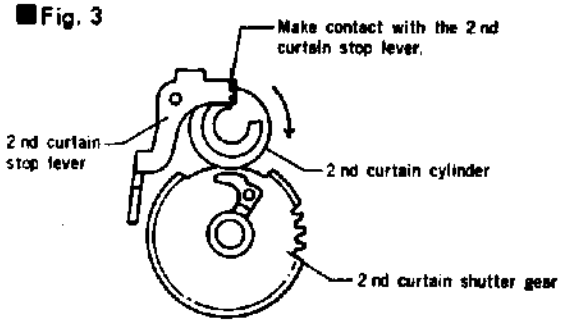
● Adjust so that the 1st curtain slit is positioned 2.5~3mm from the picture frame.

3. Holding the 1st curtain cylinder to prevent deflection of the position show in Fig. 2, fit 2126 and stop it with 2131 (curtain ribbon guide plate……P. 31). After that, check for deflection of the position (Fig. 2)

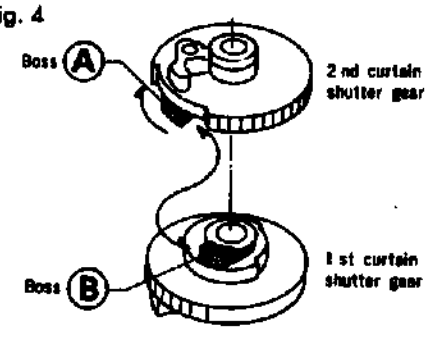
■ 2nd curtain position adjustment

1. Shift the 2nd curtain shutter gear upward and turn it to the position shown in Fig. 3. Turn the 2nd curtain cylinder clockwise and hold it in the position shown in Fig. 3.

■Fig. 3

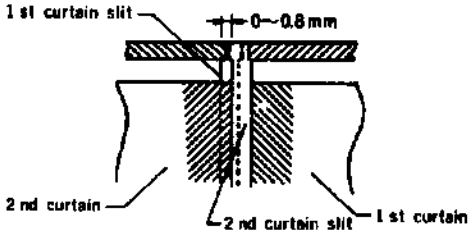


■Fig. 4



2. Turn the 2nd curtain shutter gear (Fig. 3) clockwise while pressing it down (slightly applying a force to the 2nd curtain cylinder clockwise) so that boss Ⓐ is engaged with boss Ⓑ.
3. Check to be sure that the 2nd curtain slit is positioned as shown in Fig. 5.

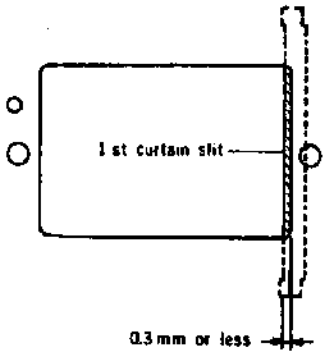
■Fig. 5 2nd curtain position (with its travel completed)



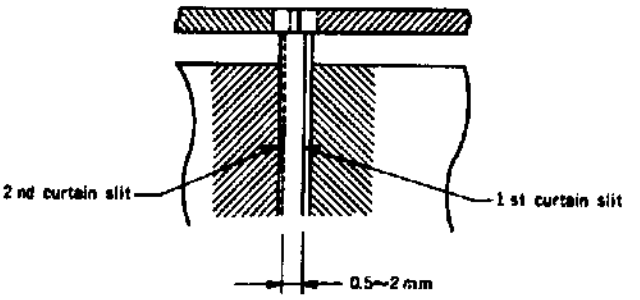
■ Checking curtain stop position (with winding completed)

[1] 1 st curtain stop position

■ Fig. 1 (Slit remaining in picture frame)



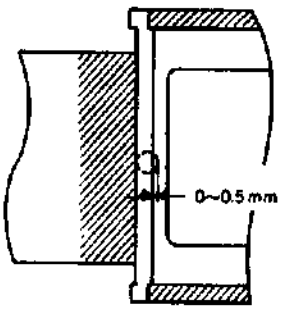
■ Fig. 2 (Overlaping of the curtains)



[2] 2 nd curtain stop position

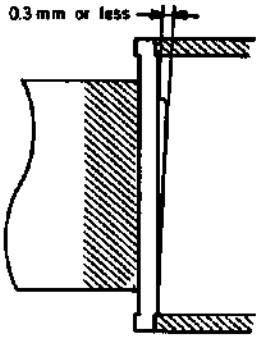
(check while letting the 1 st curtain travel.)

■ Fig. 3 (Deflection from reference hole)



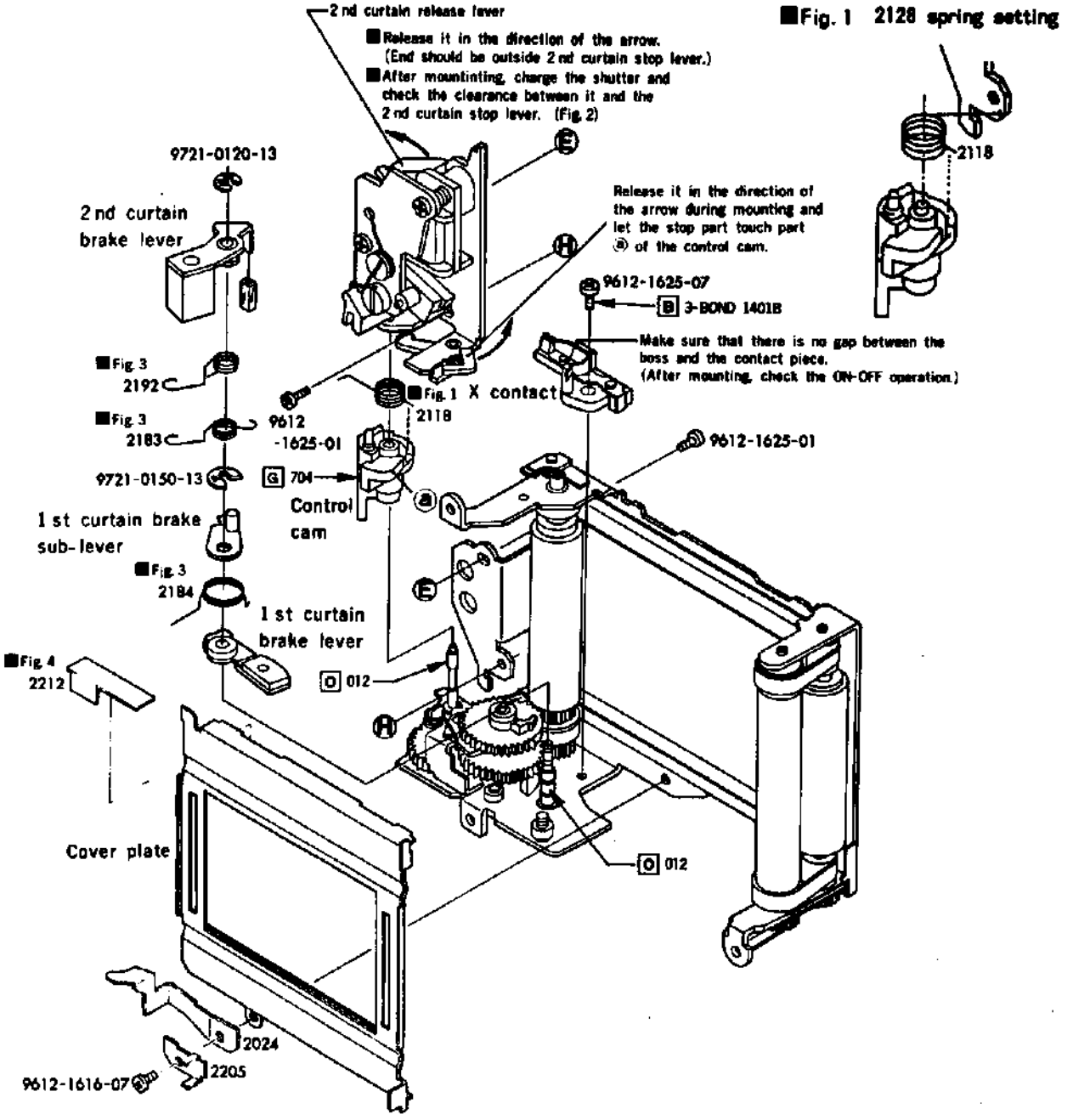
[3] Curtain tilt (deflection from picture frame)

■ Fig. 4

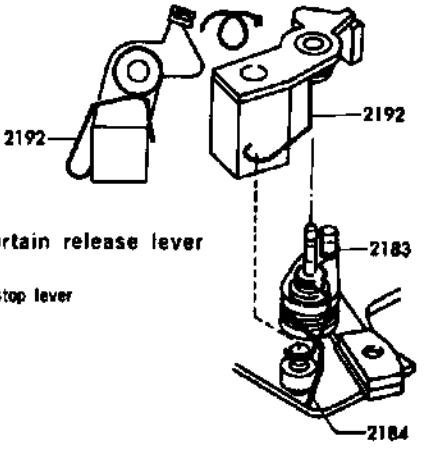


● Check both 1 st and 2 nd curtains at the edges of the picture frame.

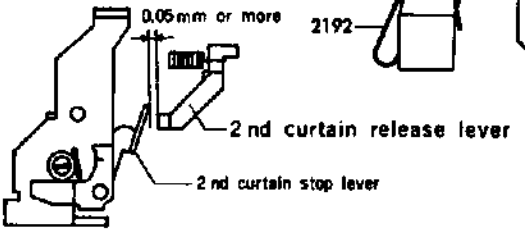
■ Shutter assembly-Ⅱ


2 nd curtain release lever
■Release it in the direction of the arrow. (End should be outside 2 nd curtain stop lever.)
■After mountinting, charge the shutter and check the clearance between it and the 2 nd curtain stop lever. (Fig. 2)
9721-0120-13
2 nd curtain brake lever
■Fig. 3 2192
■Fig. 3 2183
9721-0150-13
1 st curtain brake sub-lever
■Fig. 3 2184
1 st curtain brake lever
■Fig. 4 2212
Cover plate
9612-1616-07
2205
2024
Release it in the direction of the arrow during mounting and let the stop part touch part ⓐ of the control cam.
9612-1625-07
[B] 3-BOND 1401B
Make sure that there is no gap between the boss and the contact piece. (After mounting, check the ON-OFF operation.)
■Fig. 1 X contact 2118
9612 -1625-01
[G] 704
Control cam
9612-1625-01
[O] 012
[O] 012
■Fig. 1 2128 spring setting
2118

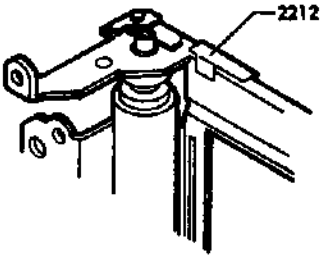
■Fig. 3 2183, 2184, 2192 spring setting



■Fig. 2



■Fig. 4



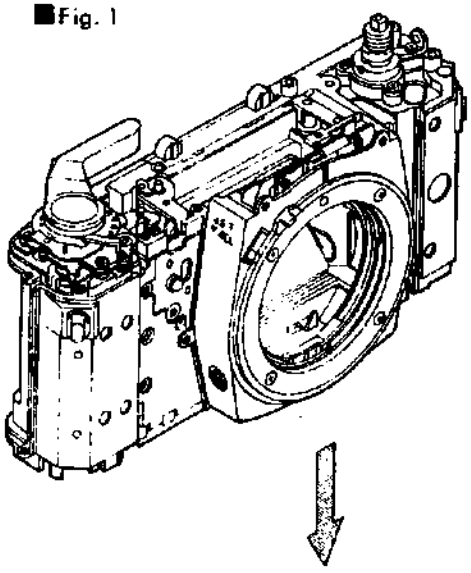
■ Shutter block adjustment

■Measuring instruments : Camera standard tester (Model ST-5101)
: Shutter tester (Model S-2101, FS-1DMN4)

■Preparations

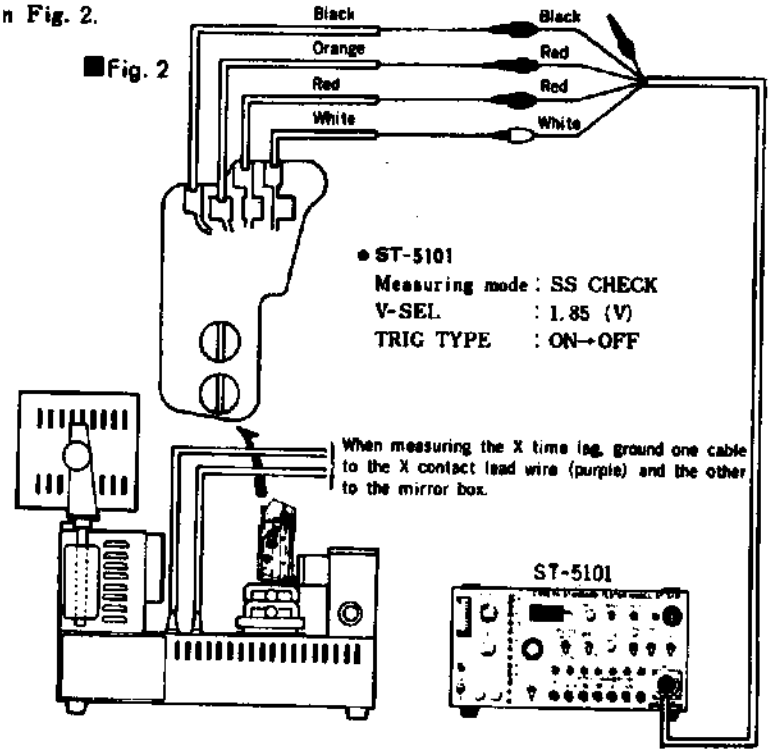
1. Mount the shutter onto the front base plate block and install it onto the body (as shown in Fig. 1).
2. Connect the tester as shown in Fig. 2.

■Fig. 1



Operate the shutter as described on P. 15.

■Fig. 2



■Adjustment procedure

[1]Curtain speed adjustment

1. Set the SS-SEL of ST-5101 to 1000 and adjust by turning the curtain spring cylinder shaft so that both curtain speeds are **11±0.3ms**. (Fig. 3)
   - When the curtain is not open, shift SS-SEL to 60 and make a rough adjustment beforehand so that both curtain speeds are about 12 ms, and then adjust again with the SS-SEL set to 1000.

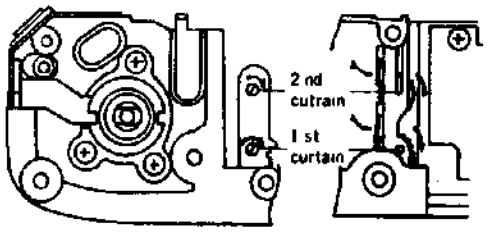
[2]Shutter speed adjustment

1. With the SS-SEL set to 1000, release the shutter and adjust by turning the S_1 eccentric pin so that the shutter tester indicates **0.98ms**. (Fig. 4)

3 X time lag adjustment

1. Connect the synchro cord of the shutter tester to the camera. (Fig. 2)
2. With the SS-SEL set to 60, release the shutter and check to be sure that the speed is **0.4ms or more in range A and 2.4ms or more in range B**.
   To make the adjustment, bend the end of the X contact.

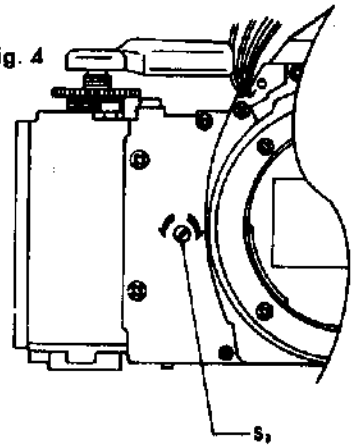
■Fig. 3



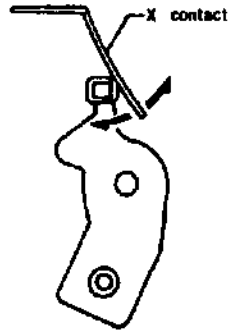
● Increasing the curtain speed

● Decreasing the curtain speed

■Fig. 4

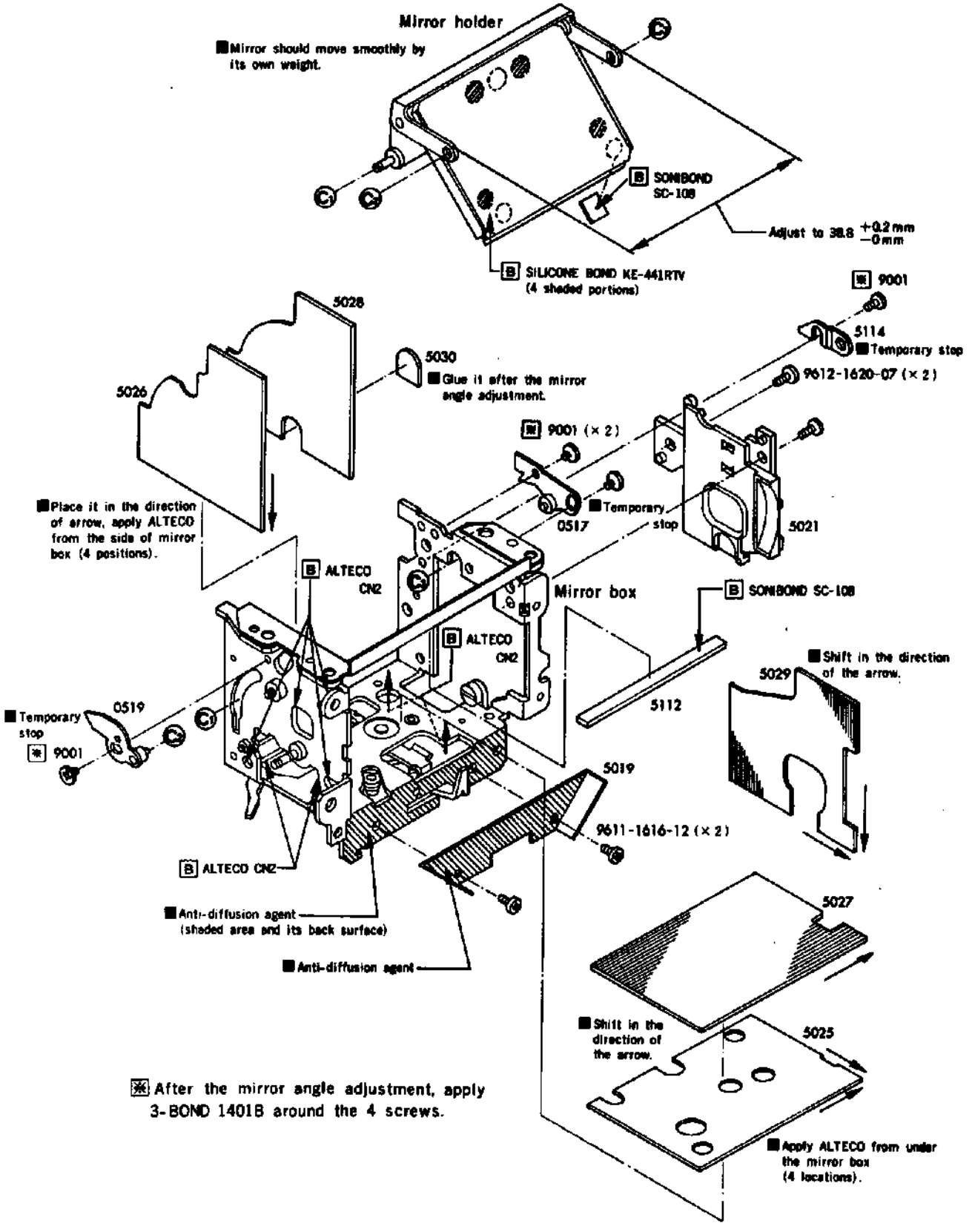


■Fig. 5



■ Mirror box assembly- I

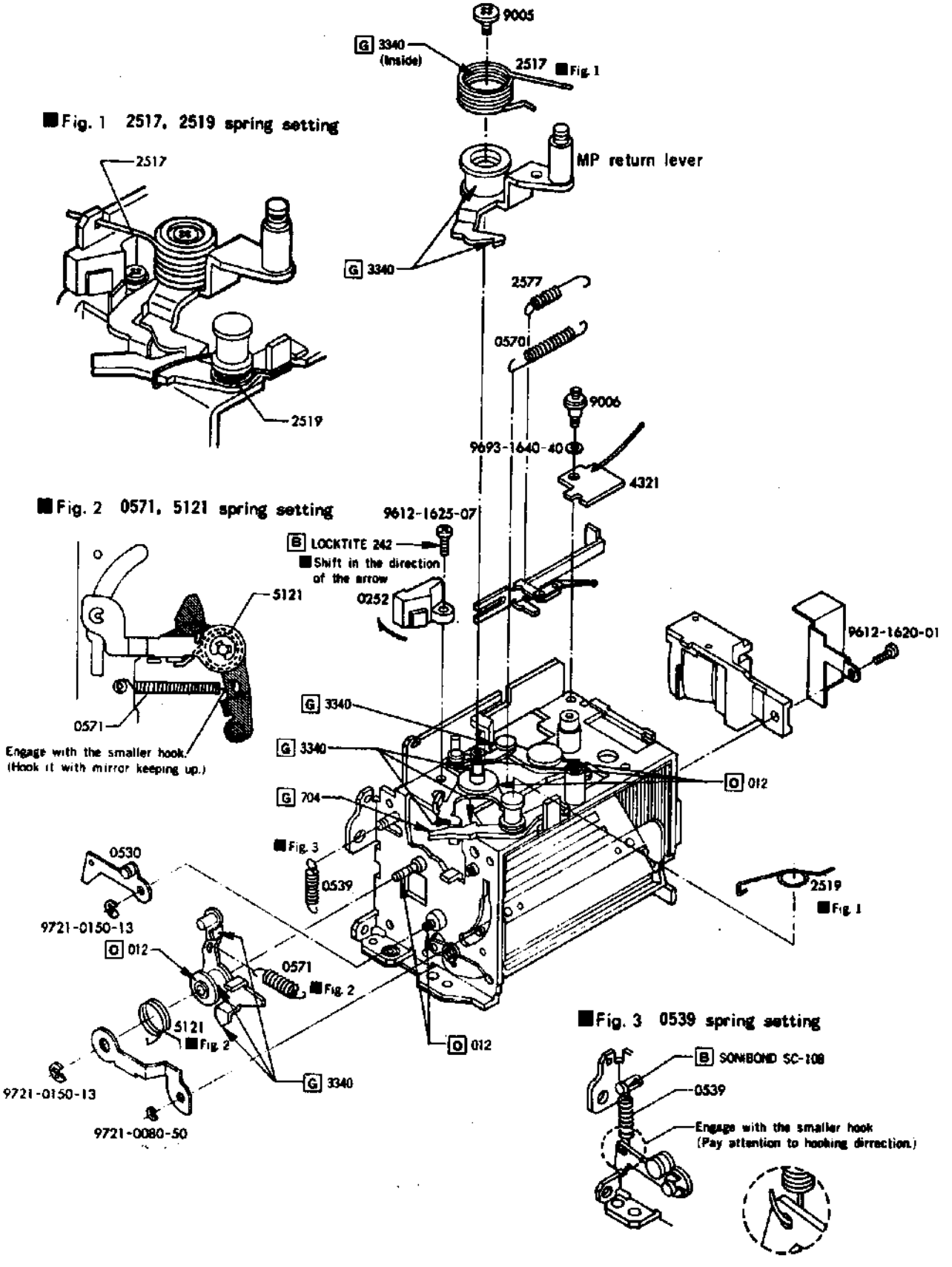
• Dilute one part of anti-diffusion agent (FC-721) with ten parts of solvent (FC-77).



※ After the mirror angle adjustment, apply 3-BOND 1401B around the 4 screws.

■ Mirror box assembly-Ⅱ

■After the completion of assembly, adjust the mirror angle as described on the next page.



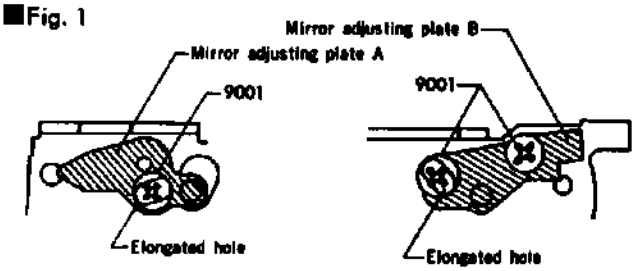
■ Mirror angle adjustment

■Measuring instrument : Mirror angle adjuster (Model MA-Ⅲ, Ⅱ)

■Prepations

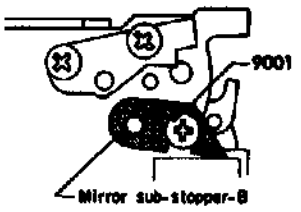
1. Mount the mirror box on the fornt base plate.
2. Loosen the setscrew (9001) of mirror adjusting plate A and B, position them as shown in Fig. 1, and then slightly tighten 9001. Completely shift the mirror sub-stopper-B down as shown in Fig. 2.
3. Set the front base plate block onto the mirror angle adjuster.

■Fig. 1



● Position 9001 at the center of the elongated hole for both mirror adjusting plates A and B.

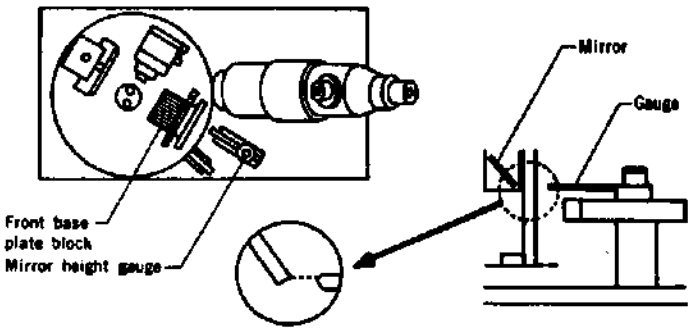
■Fig. 2



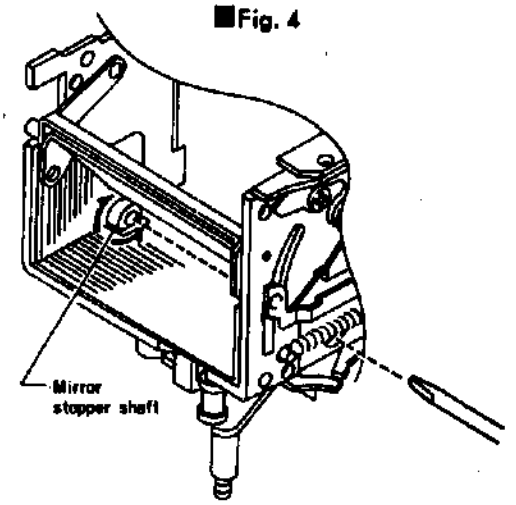
■Adjustment procedure

1. Set the mirror height gauge and front base plate block opposite to each other and adjust by turning the mirror stopper shaft so that the gauge end is aligned with the mirror end. (Insert a screwdriver into the hole beside the mirror box.)

■Fig. 3

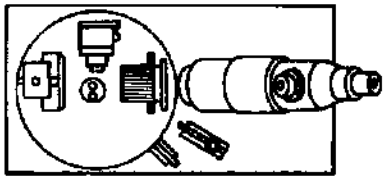


■Fig. 4

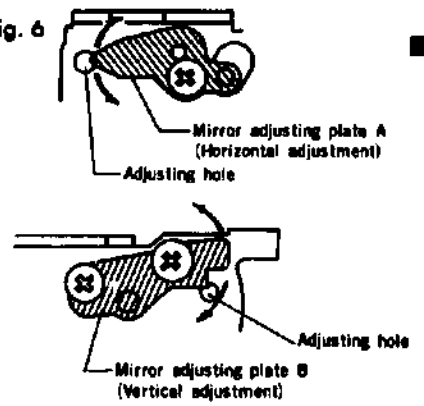


2. Place the front base plate block opposite to the auto collimator. Looking into the auto collimator, move mirror adjusting plate A and B in the direction of the arrow in Fig. 6. (By turning a ⊕ screwdriver with its tip inserted into adjusting hole) until the center of the chart image is aligned with the center of the cross (Fig. 7), and then tighten setscrew (9001).

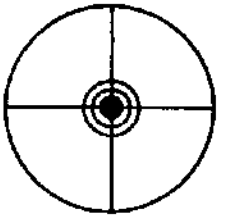
■Fig. 5



■Fig. 6

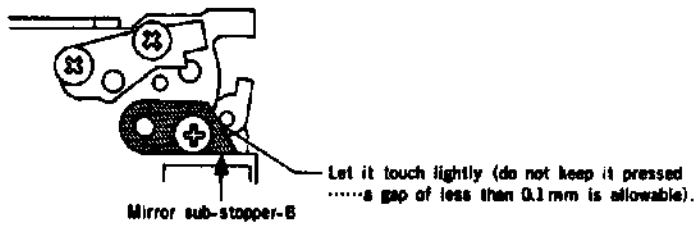


■Fig. 7



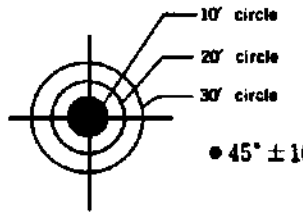
3. Push up the mirror sub-stopper-B until its end lightly touches the mirror operation lever pin, and then tighten the setscrew.

■Fig. 8



4. Operate the mirror several and make sure that the chart image is within the standard 45° ± 10′

■Fig. 9



● 45° ± 10′…10′ circle must be in touch with the cross (vertically and horizontally).

● If it is not within the standard 45° ± 10′, perform adjustments 1~3 again.

5. After completing the adjustment, apply screw-lock (3-BOND 1401B) to the screw head of mirror adjusting plates A, B, and the mirror sub-stopper, and adhere the flare prevention sheet B (5030…P. 37)

■ Sub materials

■ Grease
- #3340
- #335
- #704

■ Oil
- #012

■ Anti-diffusion agent
- FC-721
  (Dilute with solvent FC-77 by 1 : 10)

■ Adhesives
- 3-BOND 1401B
- PLIOBOND
- SILICON-BOND KE-441RTV
- ALTECO CN2
- LOCKTITE 242
- SONIBOND SC-108
- EVERGRIP

■ Cleaner
- FLONSOLVE

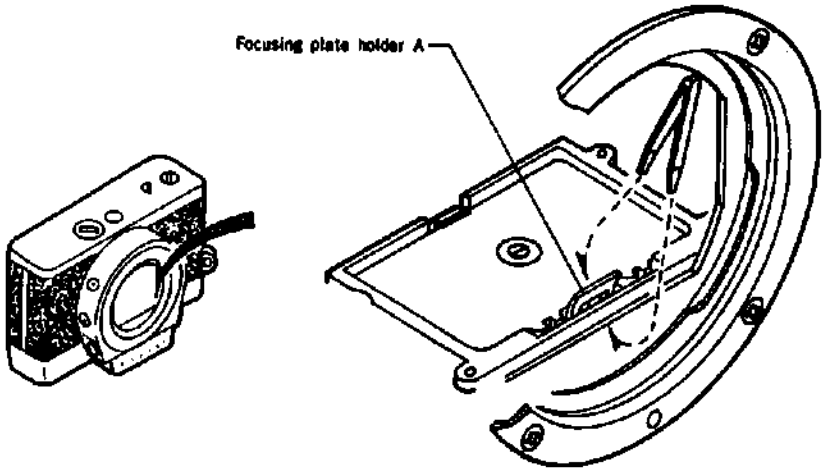
■ Focusing plate replacement procedure

■For view finder cleaning without camera disassembly or focusing plate replacement follow the procedure given below.

■Removal

Insert the tweezers between the focusing plate and focusing plate holder A.
Slightly tilt the tweezers to raise the focusing plate for removal.

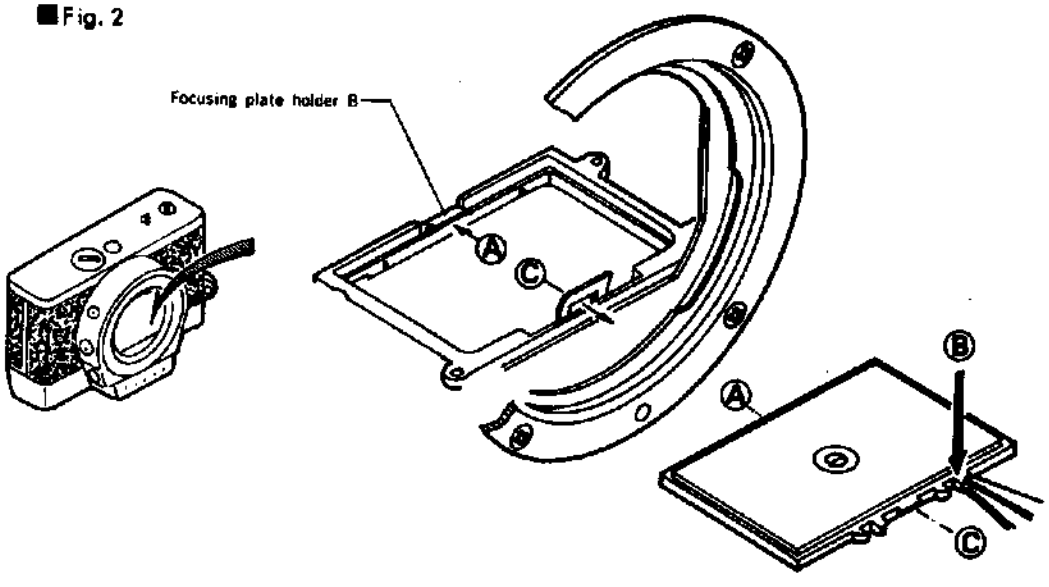
■Fig. 1



■Mounting

Hold the focusing plate as illustrated; fit part Ⓐ onto the bend of focusing plate holder B; press down arrow-marked part Ⓑ; and insert projection Ⓒ into the hold of focusing plate holder A.

■Fig. 2



■Mounting check

After mounting the focusing plate, check that the view finder back and EE level are correctly positioned.

TROUBLE-SHOOTING

1. Use of Trouble-shooting

1. This trouble-shooting chart describes symptoms and causes of troubles found on the camera side.
2. Even when trouble is found on the camera side, its cause is not always attributable to the malfunction of the camera in relation to the exchangeable lens, winder, motor drive and exclusive flash. Therefore, use this trouble-shooting chart upon confirmation of trouble on the camera after checking combined performance with the accessories according to claim contents.

2. Description

1. Trouble described here is due to a single case only. Trouble due to a plurality of causes should be checked collectively on the basis of the causes listed in this chart.
2. This trouble-shooting deals mainly with electrical causes, as well as covering part of mechanical causes.

3. Servicing Precautions

1. Type 2507 digital multimeter is basically used for measurement. Any other kind of measuring instrument, however, may be used, if its minimum input impedance is more than 10MΩ.
2. Use this tester for voltage checks and a tester of less than 3V for measuring conduction.
3. Trouble is most unlikely to occur in electronic parts, such as ICs, diodes, transistors, resistors, and capacitors. Therefore, check the cause of trouble, with the focus on the defective soldering of lead wires and electrical parts, and switching contacts.
4. When checking soldered or plated parts, avoid pressing the parts or pulling lead wires unnecessarily.
5. Since voltage measuring parts are narrow, mount a pin or something similar at the tip of an alligator clip for measurement.
6. When measuring switching patterns, special care should be taken so that the patterns outside switch operation are free from flaws. For switch contacts, measure their base, which is not directly affected by contact pressure.
7. Be sure to turn off the power switch before removing electrical parts (when a constant-voltage regulated power supply is used).
8. The ideal temperature range for the soldering iron tip is 290°C to 340°C. If the temperature is higher, however, perform soldering quickly. Also, be sure to clean the chip when soldering.

4. Description on Trouble-shooting Table and Trouble-shooting Chart

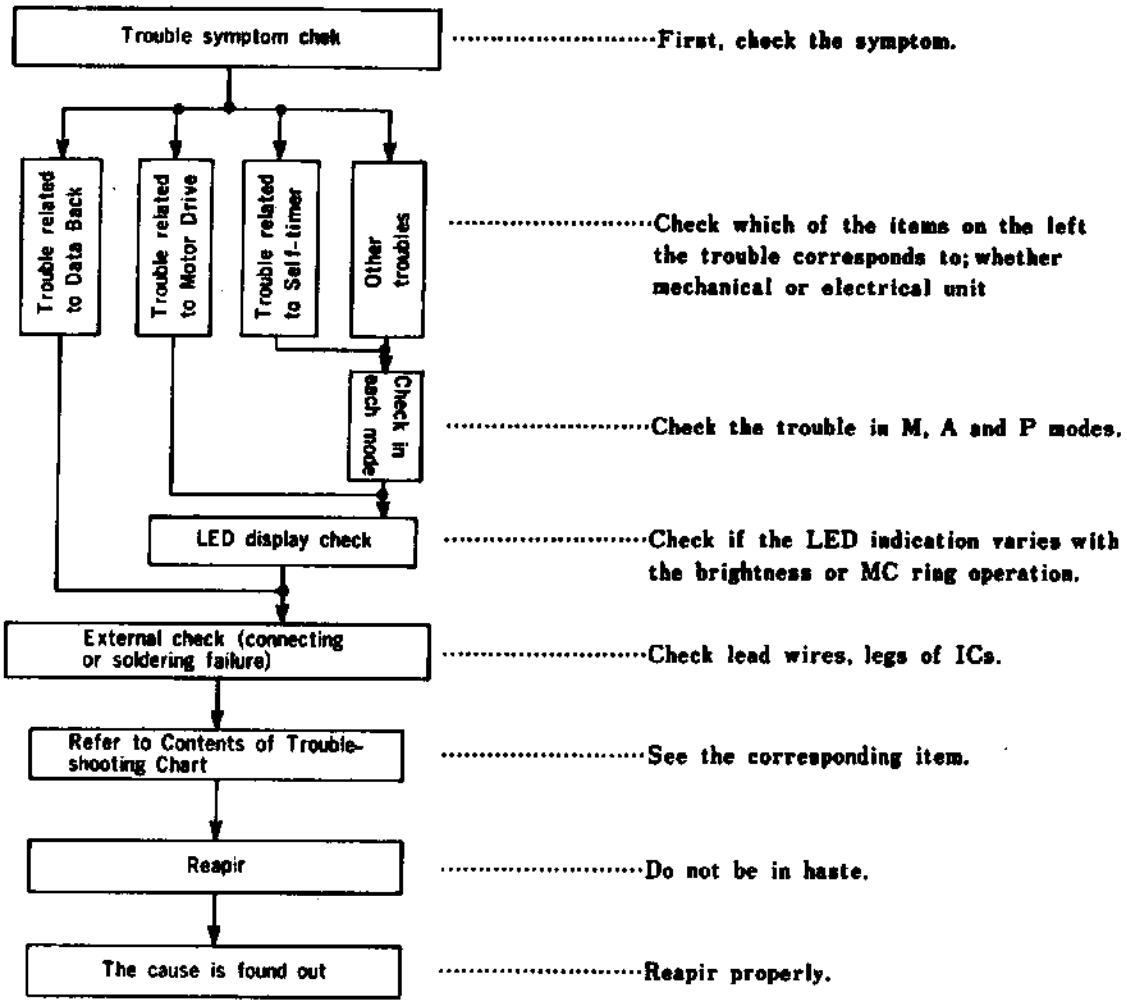
4-1. Trouble-shooting Table

1. From symtom, trouble cause can be found.
2. The Trouble-shooting Table combines the "INDEX" and summary of details of "Trouble-shooting Chart.
   Accordingly, use those properly as the needs of the case demand.

4-2. Trouble-shooting Chart

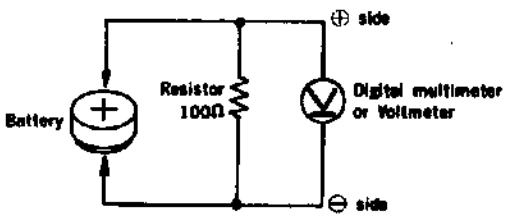
1. The chart presents the checkpoints to be followed from the symptom to finding the cause of trouble.
2. The voltage for each checkpoint is the value when SW_8 or SW_1 is ON upon completion of film winding (before releasing). It is a potential difference from ⊖ of power supply.
3. For all trouble symptoms other than "Electromagnetic release does not operate," check their cause, assuming that the electromagnetic release operates properly.
4. The chart shows the check in the ⬚ is done by operation and in the ▭ by measurement.

5. Repair procedure


Trouble symptom chek
First, check the symptom.
Trouble related to Data Back
Trouble related to Motor Drive
Trouble related to Self-timer
Other troubles
Check which of the items on the left the trouble corresponds to; whether mechanical or electrical unit
Check in each mode
Check the trouble in M, A and P modes.
LED display check
Check if the LED indication varies with the brightness or MC ring operation.
External check (connecting or soldering failure)
Check lead wires, legs of ICs.
Refer to Contents of Trouble-shooting Chart
See the corresponding item.
Reapir
Do not be in haste.
The cause is found out
Reapir properly.

6. Battery Capacity Check

1. A 100Ω resistor is paralleled with the battery at normal temperature (25±25°C), as illustrated. A digital multimeter or voltmeter is connected to the battery in parallel to the resistor to measure the voltage. In this case, be sure to perform quick measurement.
2. The battery, with its voltage more than 1.4 V, is regarded as normal.



INDEX

for Trouble-shooting Table/Chart

Ⅰ. **Trouble related mechanism** (Winding and shutter releasing are impossible)·····P. 6, 7

Ⓐ Returning winding lever to original position after winding completion, shutter curtains return to position of shutter released.

Ⓑ Appearing of shutter curtain slit.

Ⓒ Charge operation plate set does not return at winding completed.

Ⓓ Others

For the cause or repairing method related mechanism trouble, refer to Trouble-shooting Chart.

★Explanation of Trouble-shooting Table

1. ○ of number of SW, or Lead Wire shows·····Shortcircuit with GND.
   (e.g. SW-④·····Shortcircuit SW_4 and GND)
2. ◯ of IC or Others shows shortcircuit between·····• IC pins.
   • Joint part and printed wiring.
   (e.g. IC_1 ⑩-㊶ ·····Shortcircuit IC_1 40 and 41
   SPC (A-K) ····· Shortcircuit SPC anode and cathode)
3. ○ of others shows····· Shortcircuit by elements failure.
4. Only numeral without any marks shows;
   For SW·····Contact failure.
   Others·····Cold soldering or disconnection.

Ⅰ. Trouble related electro unit

Symptom \ Cause		Page	SW	Lead Wire	VR	SL	R	C	Q	J (Jump lead)	IC-1	IC-2	OTHERS
Shutter release failure	No LEDs light, shutter is not released···Release impossible even with Main SW. (S_1) ON→OFF→ON operation.	8	6	22(Red)					1	2	37, (㊱-㊶)	21, 29, (11-12) (43-44) (44-45)	Joint part a-c XL
	LEDs remain light, and shutter is not released with release SW.(S_2) ON···Release impossible even with Main SW.(S_1) ON→OFF→ON operation.	8	2, Ⓐ	⑫(Yellow) 36(Grey)			12		4	4, 5		43	
	With release SW.(S_2) ON, LEDs go out, but shutter is not released···Release impossible, and LEDs light with Main SW.(S_1) ON→OFF→ON operation.	8		32(Green) SL_1(Green, White, (White))		1	7	7	2		10, 11	15	
	Shutter is not released with remote control SW.(S_M) ON···Release possible with operating button operation.	9		10(Grey) 39(Black)									
	Shutter is not released even though self-timer LED lights with metering SW. (S_3 or S_4) ON···No finder LEDs light.	9								1	39		
	Main SW.(S_1) ON makes shortcircuit, resulting in shutter release impossible and no lighting LEDs.	9		⑫(Red)									Joint part (b-c)
	Main SW.(S_2) and metering SW.(S_3 or S_4) ON make shortcircuit, resulting in release impossible and no LEDs lighting.	9					⑨	④					
	After shutter releasing with Main SW.(S_1) ON→OFF→ON, release impossible and no LEDs light.	9	4	21(Yellow)								42, (45-46)	
	Shutter is released when winding up.	9	②, ①	⑪(Grey), ⑧(Grey) ⑭(Grey)									Remote control shortcircuited
	LEDs light and, shutter release is impossible with Main SW.(S_1) OFF.	9											Joint part (a-c)
Finder indication failure	No LEDs light with metering SW.(S_3 or S_4) ON···Shutter operates normally.	10	0, 1	35(Brown)			9					37, 49	Joint part 1
	No LEDs light with metering SW.(S_3 or S_4) ON···Shutter stays open with self-timer LED ON when released.	10										14	
	Only "M" does not light.	10										50, (49-50)	Joint part 2
	Part of LEDs does not light.	10										1~9, 50~56	Joint part 2~17
	Self-timer LED lights with Main SW.(S_1) ON.	10		⑭(Grey)							(12-13)		
	LEDs light with Main SW.(S_2) ON.	10	① ⑥	⑫(Yellow) ⑨(Brown)									
	LEDs light by Main SW.(S_1) ON with shutter speed dial set at 30~1000 or A.	10										(36-37)	
	When voltage is under specified B.C voltage, shutter release lock does not operate with LEDs ON.···No mode LED blinks.	11									3	23	
	When decreasing voltage, mode LED remains ON; does not blink···No LEDs light when release locked	11									2	24	

Symptom		Cause	Page	SW	Lead Wire	VR	SL	R	C	Q	J (Jump lead)	IC-1	IC-2	OTHERS
Shutter failure	Shutter curtains travel in high speed or without slit	LED indication is normal. Shutter curtains travel without slit in M and A modes	11		13(Red) 14(White)		2			3	3		30	
		In A mode shutter operates in high speed with △ blinking. (1) LED indication remains the same when changing AV, film speed and luminance.	11		7(Green) 7'(Green)	1(SV) 4 5		3	3 9			6, 8, 14, 17, 27, 28, 29, 33 1-5 5-8 6-7 7-8 13-10 14-15 15-16 23-9 26-27 32-30	17 19	
		(2) LED indication remains the same only when changing AV.	12		3(Orange)	2(AV)								
		(3) LED indication remains the same only when film speed changing.	12		5(Brown)									
		(4) LED indication does not change in accordance with luminance.	12									21-22		SPC 1-A-K
		LEDs are normal. In M and A modes shutter curtains travel without slit when set to high speed.	12	3	15(Orange)								12	
		In A and M modes, shutter speed remains 1/60 with LEDs "M" and "1/60" lighting.	12											Looseness of auto lock button guide (2017-3018-01)
		LED indication is normal. Occasional high shutter speed under darkness.	12									7	38	
	Shutter remains open	LED indication is normal. Shutter stays open in M and A modes···Slow shutter speed limit, 4 sec., does not operate.	13	③	②(White), ⑥(Orange)							41-42	25-26	
		In A mode, shutter stays open with ▽ blinking···Slow shutter speed limit does not operate. (1) LED indication remains the same when AV, film speed, and luminance changing.	13		4(Blue), ④(Blue) ⑤(Brown), ⑤(Brown)	2(AV) 6		6				15, 16, 21, 22, 25, 26, 30, 34 8-9 16-17 24-25 27-28		Crack of SPC 1 AV resistor plate
		(2) LED indication remains the same only when changing AV.	13		5(Brown)									
	Others	In A mode, LED indication and shutter speed operate as slow shutter speed···Over exposure. (1) LEDs and shutter speed remain the same only when film speed changing.	14		8(Orange) 6-7 3-5	1(SV)						25-26		
		(2) LEDs and shutter speed remain the same when AV and film speed changing.	14		6-8 3-5							32		
		In M mode, shutter does not operate in accordance with speed set by shutter speed dial···LEDs indicate operating shutter speed.	14											Refer to Trouble-shooting Chart
		Excessive deflection of LED indication and shutter speed from AV and film speed setting.	14		③(Orange) ⑧(Orange)									
Self-timer failure		Shutter release without delay···No self-timer LED blinks.	15	10	11(Blue)								40	Looseness of self-timer P.C board screw
		Shutter release without delay···Self-timer LED blinks after shutter release.	15									9-10	15-16	
		Shutter release with delay for 10-sec.···No self-timer LED blinks.	15		16(Grey), 17(Green)			6				9, 12	16	Shortcircuit between anode of LD-17 and GND
		Shutter release impossible with self-timer···Self-timer LED does not blink.	15									13		
		Shutter operates in high speed with self-timer in A mode.	15									8-9	16-17	
		Shutter release with delay for 10-sec., locking AE.	15										40-41	Shortcircuit of printed wiring on self-timer P.C board
		Self-timer operates always.	15	⑩	⑪(Blue)									
AE lock failure		AE lock does not operate.	16	14	12(Yellow)								41	Looseness of self-timer P.C board screw
		AE lock operates always.	16	⑩	⑪(Yellow)									
		AE lock operates only after shutter release···Shutter release is impossible with AE lock SW locked.	16										41-42	

Symptom	Cause	Page	SW	Lead Wire	VR	SL	R	C	Q	J (during load)	IC-1	IC-2	OTHERS
PV (Preview) failure	Stop-down metering is impossible with PV button pushed in.	16	9	9(Light blue)							35		
	Pushing PV button in high luminance makes ▽ blinking, and keeping shutter open in A mode. Pushing PV button in low luminance makes △ blinking, and operating shutter in high speed in A mode.	16									㉞-㉟		
	Undesired stop-down metering.	15	⑨	⑨(Light blue)									
Flash firing failure (Check in A mode using AEF 280PX)	LED indication is normal with flash fully charged. But flash does not fire properly. (1) Flash fires manually always, FDC signal is not indicated. (Time counter does not indicate normally/long when checking strobe level)	17		SPC-2 (Purple, White)	3			②			4, 5, 18, 29, 30, 31, 36 ⑮-⑳ ㉜-㉝ ㉟-㊲ ㉘-㉙	20, 22 ⑳-㉑ ㉑-㉒	SPC-2
	(2) Insufficient firing with FDC signal ON···Time counter shows short value when checking strobe level.	17		SPC-2 (⑫White)			5	2			36, ⑱-㉙ ㉙-㉚ ㉚-㉛ ㉛-㉞		⑫SPC-2
	(3) Excessive firing with normal indication of FDC···Time counter shows long value when checking strobe level	17					2				⑰-⑱		
	(4) Flash does not fire. Shutter stays open.	17	SX1 SX2	27(Pink), 29(Purple) 28(Pink)									F_1 terminal Sync terminal
	(5) Flash does not fire. Shutter operates as Auto X.	17									㊲-㊳		
	LED indication failure with flash fully charged. (1) "1/60" does not blink. Metered shutter speed LEDs light on. Shutter does not operate as Auto X.	18		30(White)⑩							1, 41	25	F_2 terminal
	(2) "1/60" does not blink; remains ON. Flash fires with shutter operated as Auto X.	18		30, 31(Viceversa							43	27	
	(3) "1/60" does not blink. Metered shutter speed LEDs blink. Firing without shutter operated as Auto X.	18									44	26	
	(4) "1/60" blinks. Mode LED (A) does not blink. Manual firing with shutter operated as Auto X.	18		31(Brown)⑪							38		F_3 terminal
	(5) No mode LED lights.	16									42	24	
	(6) Flash does not fire. Mode LED, metered shutter speed LEDs, and "1/60" blink.	18		25(Black), 26(Black)									Ground is not connected at hot shoe
	(7) "1/60" does not blink. Metered shutter speed LEDs light on. Shutter does not operate as Auto X.···Monitor lamp of flash unit will not light up.	18	(SX2)	⑦(Pink), ⑧(Purple) ⑨(Pink)									Sync terminal shortcircuited
Others	Winding is impossible by motor drive.	19										48	W_3 terminal
	No LEDs light with metering SW.(S_2 or S_1) ON of Motor Drive.	19										47	W_2 terminal
	Shutter is not released by Motor Drive.	19											W_1 terminal
	Shutter is not released with Multi-Function Back in Fl mode.	19		19(Black) 20(Grey)									D_2 terminal, D_3 terminal
	Imprint indicator does not light.	19		18(Brown)								46	D_1 terminal
	Shutter releases when winding with Multi-Function Back attached.	19		19, 20(Viceversa)									
	Piezo buzzer does not sound.	19		Buzzer(Red, Black) 43(Red)								13	Piezo buzzer

I. Trouble related mechanism

(Winding and shutter releasing are impossible).

A. Returning winding lever to original position after winding completion, shutter curtains return to position of shutter released.

- Under-charge→Adjust the shutter charge following Service Manual Repair Guide P. 16.
- Looseness of winding shaft riveting (0338)→Replace winding shaft.

B. Appearing of shutter curtain slit.

2nd curtain stops at the half way. By pushing, 2nd curtain moves to original position.

YES → • 2nd curtain does not travel completely. ····· Refer to next page ※1.

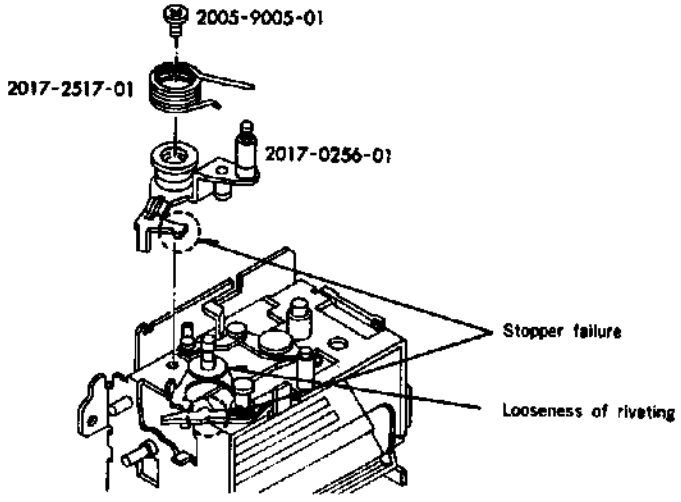
NO → • Disengagement of ribbon
• Catching of ribbon.
• 1st curtain-brake failure. ····· Refer to next page ※2.

C. Charge operation plate set does not return at winding completed.

- Winding operation lever does not work properly. ····· Refer to next page ※3.
- (Stiff / Disconnection of SP. / Deformation of SP.)

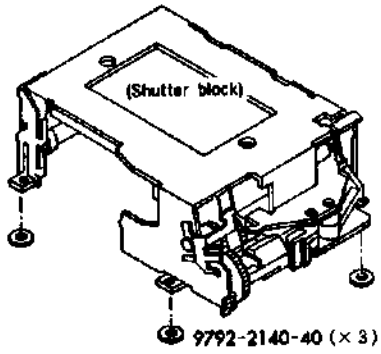
D. Others

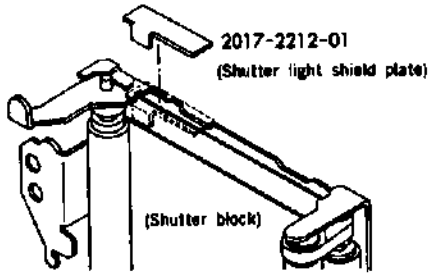
- Charge lever bent. → Adjust or replace.
- Disconnection of charge lever from charge roller. → Adjust or replace the charge lever and charge roller.
- Disengagement of mirror holder rivet. → Replace the mirror holder. (Adjust and check the mirror angle)
- Foreign particle on the mirror holder.
- MP return lever set (0256) stopper failure.
- Looseness of MP return lever riveting shaft. ·····Refer to following figure.



※1. 1st curtain does not travel completely.

- Use 3 washers (t=0.2mm) between front base plate and shutter block installing position to prevent the catching of MP return lever shaft and shutter cover plate.
- Stick the shutter light shield plate as illustrated because there is possibility of light leakage when using washers.



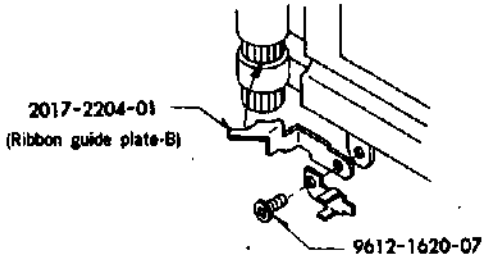


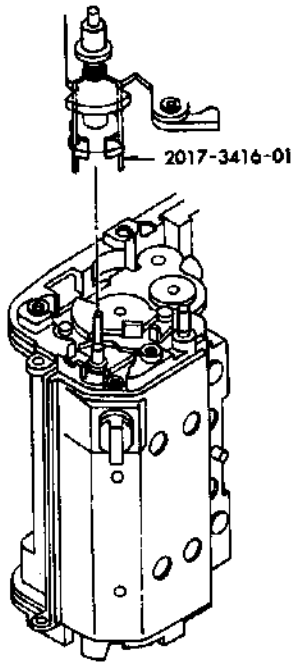
※2. Disengagement or catching of shutter ribbon.

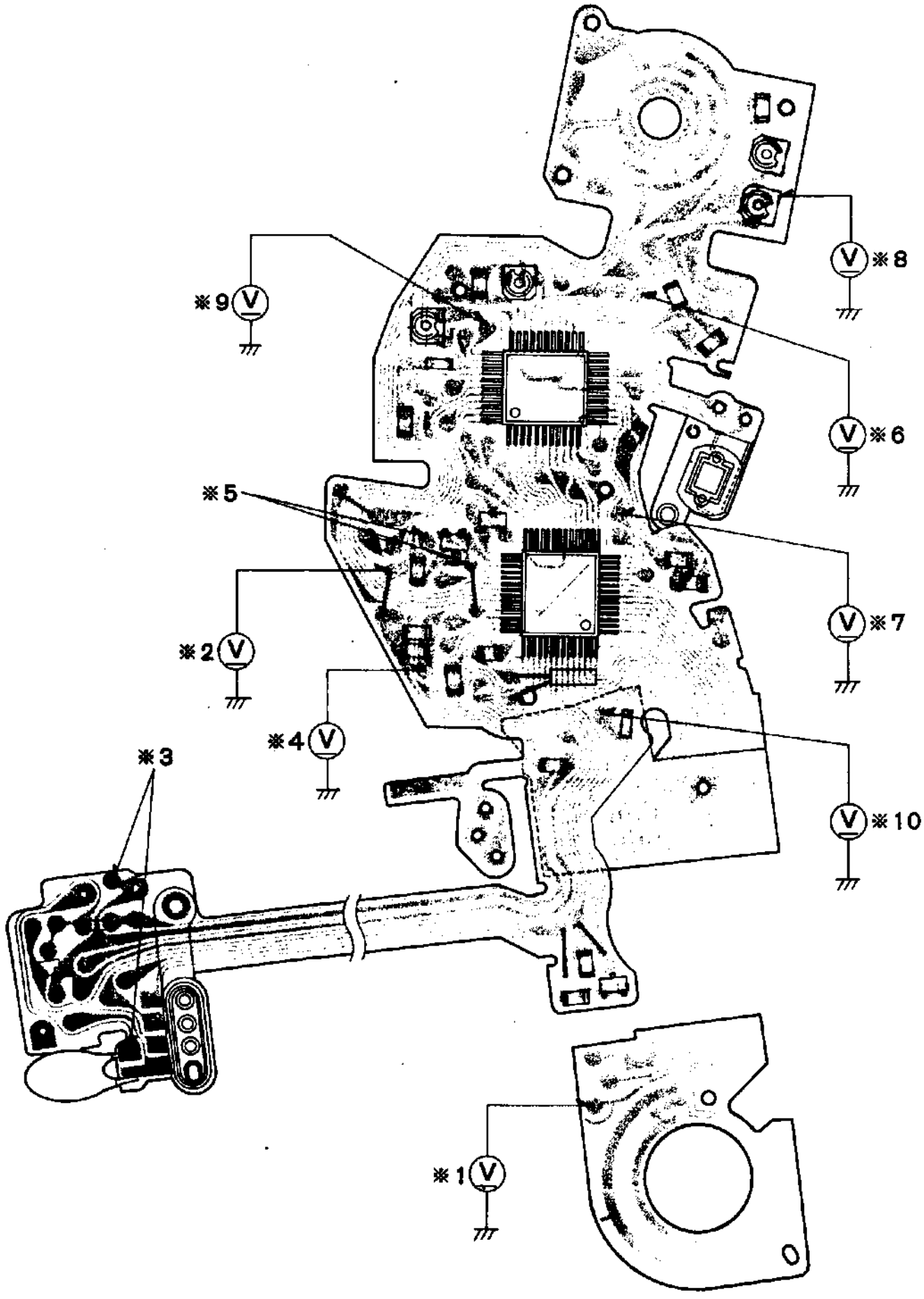
- Replace with new shutter block, however, repair as following method for minor trouble.
- Use ribbon guide plate-B to prevent the 1st curtain catching with 2nd curtaun shutter gear.

※3.

- Clean the winding operation lever and the holder.
- Adjust the spring (3416) shape or replace it.





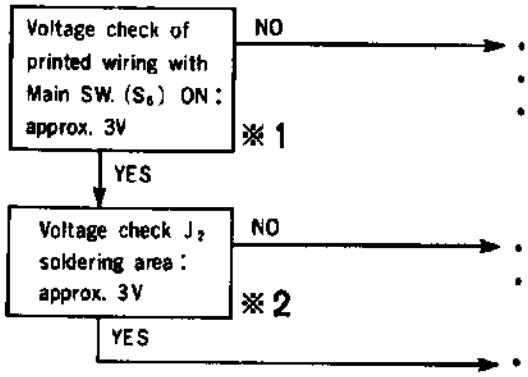

※1
※2
※3
※4
※5
※6
※7
※8
※9
※10

Ⅱ. Trouble related to electro unit

- ※1~※10 show the check point on the diagram left.
- A-6 or the like on the right shows the position (coordinate) on the schematic wiring diagram (P.25).

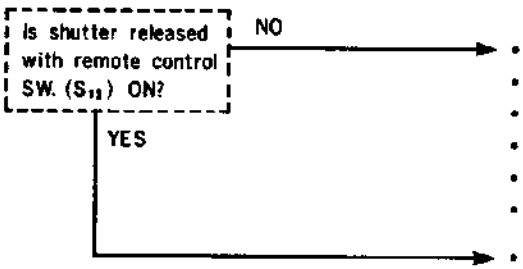
A Shutter release failure

1 No LEDs light, shutter is not released···Release impossible even with Main SW. (S_6) ON→OFF→ON operation.



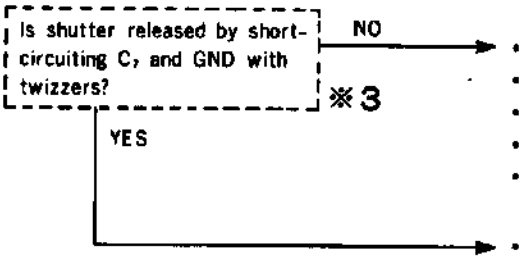
- Main SW.(S_6) contact failure
- Joint part ⓐ; soldering failure
- ℓ_{22} (Red) soldering failure or disconnection····· D-3
- J_2 soldering failure····· F-5
- Joint part ⓒ; soldering failure
- XL soldering failure ····· E-7
- Q_1 soldering failure or element failure ····· G-6
- IC_1㊲ soldering failure
- IC_2㉑, ㉙ soldering failure
- IC_1㊵-㊶ shortcircuit
- IC_2⑪-⑫, ⑬-⑭ shortcircuit
- IC_1㊹-㊺ shortcircuit

2 LEDs remain light, and shutter is not released with release SW. (S_2) ON.·····
(Release impossible even with Main SW. (S_6) ON→OFF→ON operation.



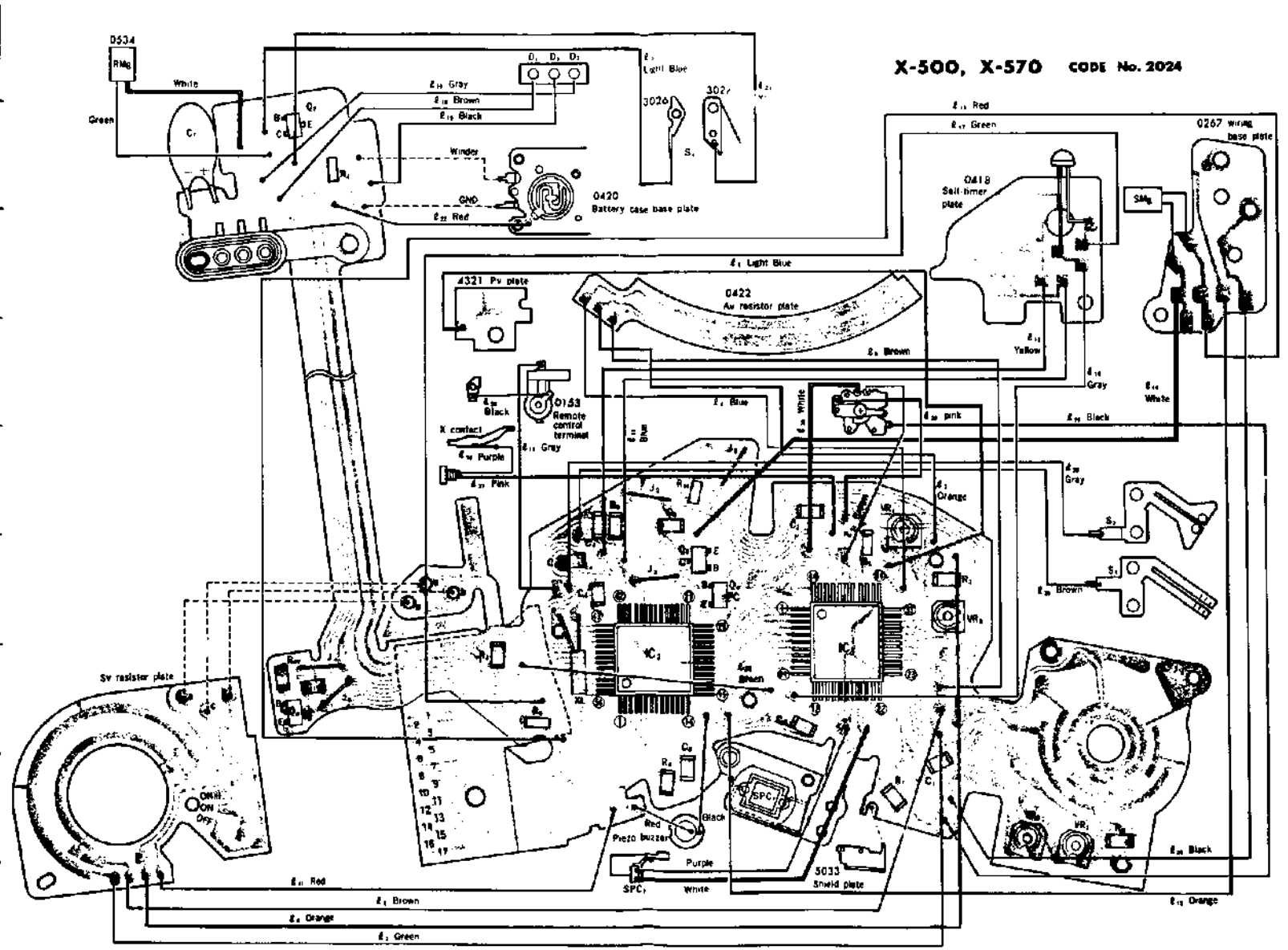
- Reset SW.(S_4) shortcircuit
- ℓ_{21} (Yellow) and GND shortcircuit (catching) ····· G-1
- J_4, J_5 soldering failure ····· C-7
- R_{12} soldering failure or element failure ····· C-7
- Q_4 soldering failure or element failure ····· C-7
- IC_2㊸ soldering failure
- S_2 contact failure
- ℓ_{34} (Grey) soldering failure or disconnection····· J-5

3 With release SW. (S_2) ON, LEDs go out, but shutter is not released·····
(Release impossible, and LEDs light with Main SW. (S_6) ON→OFF→ON operation.



- SL_1 (R-Mg) failure (Absorptive surface dirty)
- SL_1 lead wires (Green, White) disconnection··· A-2, B-1
- C_7 soldering failure or element failure ····· B-2
- R_7 soldering failure or element failure ····· C-2
- SL_1 lead wire (White) and GND shortcircuit ····· B-1
- ℓ_{32} (Green) disconnection ····· G-7
- Q_3 soldering failure or element failure ····· C-2
- IC_1⑩, ⑪ soldering failure
- IC_2⑮ soldering failure

X-500, X-570 CODE No. 2024



Assy. Part No. 2024-0401-01　　Assy. Part Name Flexible P.C. board set
フレキシブル基板セット

Symbol	Part No.	Com	Part Name	Type.	Qty.
Q1	9363-1032-01	02,03	Transistor	2SA1162 SO,SY,SG	1
Q2	9362-1261-02	03		2SD1048 X7,X8	1
Q3,Q4	9362-1032-01	02,03,04		2SC2712 LO,LY,LG,LL	2
XL	9373-4162-01		Crystal resonator	C-002R	1
SPC1	2024-0491-01		Silicon photo cell		1
R4,R1	9432-2246-62		Fixed resistor	1/8W 220KΩ	2
R2	9432-1036-62			1/8W 10KΩ	1
R3	9432-1536-62			1/8W 15KΩ	1
R5	9422-6826-62			1/8W 6.8KΩ	1
R6	9422-1016-62			1/8W 100Ω	1
R7	9422-1026-62			1/8W 1KΩ	1
R8	9432-3357-61			1/8W 3.3MΩ	1
R9	9432-1068-61			1/8W 10MΩ	Choose one from these
	9432-2068-61			1/8W 20MΩ	
	9432-3068-61			1/8W 30MΩ	
R11	9422-6836-62			1/8W 68KΩ	Choose one from these
	9422-8236-62			1/8W 82KΩ	
	9422-1246-62			1/8W 120KΩ	
	9422-1846-62			1/8W 180KΩ	
	9422-3946-62			1/8W 390KΩ	
R12	9431-3348-62			1/16W 330KΩ	1
VR3	9472-2239-64		Variable resistor	EVM-04G 22KΩ	1
VR4	9472-3329-63			EVM-14G 3.3KΩ	1
VR5	9472-1539-63			EVM-14G 15KΩ	1
VR6	9472-1039-63			EVM-14G 10KΩ	1
C1	9565-1034-64		Condenser (Ceramic)	0.01μF/50V	1
C2	9564-3324-61		(Ceramic)	3300PF/25V	1
C3	9564-4734-64		(Ceramic)	0.047μF/25V	1
C4	9564-1034-61		(Ceramic)	0.01μF/25V	1
C5,C6	9564-2204-65		(Ceramic)	22PF/25V	2
C7	9531-1575-61		(Tantalum)	150μF/3.15V	1
C8	9565-3338-65		(Ceramic)	0.033μF/50V	1
C9	9565-4705-62		(Ceramic)	47PF/50V	1
C10	9565-4738-65		(Ceramic)	0.047μF/50V	1
ℓ32	9391-0807-05		Lead wire-Green	60.08/7 ℓ=35	1

[4] Shutter is not released with remote control SW. (S_{13}) ON
……(Release possible with operating button operation.)
- ℓ_{10} (Grey) soldering failure or disconnection …… E-5
- ℓ_{20} (Black) soldering failure or disconneciton …… D-4

[5] Shutter is not released even though self-timer LED lights with metering SW. (S_8 or S_1) ON
……No finder LEDs light.
- J_1 soldering failure …… G-5
- IC_1 ⑲ soldering failure

[6] Main SW. (S_1) ON makes shortcircuit, resulting in shutter release impossible and no lighting LEDs.
- The joint parts b – e shortcircuit
- ℓ_{12} (Red) and GND shortcircuit …… I-2

[7] Main SW. (S_9) and metering SW. (S_8 or S_1) ON make shortcircuit, resulting in release impossible and no LEDs lighting.
- R_9 shortcircuit …… F-5
- C_4 shortcircuit …… E-6

[8] After shutter releasing with Main SW. (S_9) ON→OFF→ON, release impossible and no LEDs light.

Normal shutter speed when releasing:
- Reset SW. (S_4) contact; contact failure
- ℓ_{21} (Yellow) soldering failure or disconnection …… G-1
- IC_2 ㊷ soldering failure

Shutter curtains travel without slit when releasing:
- IC_2 ㊸–㊻ shortcircuit

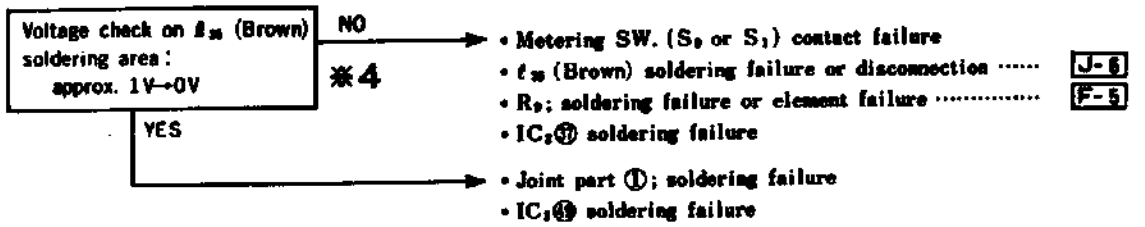
[9] Shutter is released when winding up.
- Release SW. (S_2) shortcircuit
- ℓ_{10} (Grey) and GND shortcircuit …… E-5
- ℓ_{20} (Grey) and GND shortcircuit …… D-1
- ℓ_{30} (Grey) and GND shortcircuit …… J-5
- Shortcircuit between remote control SW. (S_{13}) contact and spring (2024-4460)
- Remote control terminal shortcircuit

[10] LEDs light and, shutter release is impossible with Main SW. (S_9) OFF.
- Joint parts a – c shortcircuit

B Finder indication failure

1 No LEDs light with metering SW. (S_8 or S_1) ON

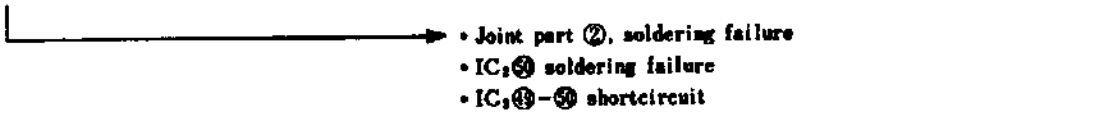
·····(Shutter operates normally.)


Voltage check on ℓ36 (Brown) soldering area : approx. 1V→0V
NO
※4
YES
• Metering SW. (S8 or S1) contact failure
• ℓ36 (Brown) soldering failure or disconnection ····· J-6
• R9; soldering failure or element failure ····· F-5
• IC2㊲ soldering failure
• Joint part ①; soldering failure
• IC3㊾ soldering failure

2 No LEDs light with metering SW. (S_8 or S_1) ON

·····Shutter stays open with self-timer LED ON when released.

3 Only "M" does not light.

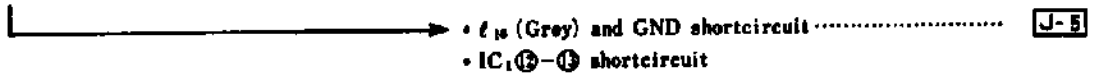


4 Part of LEDs does not light.

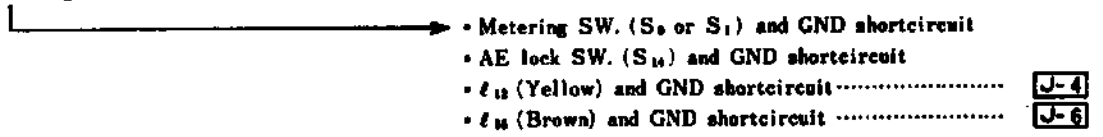
Check soldering failure of IC_2, flexible P.C board···joint part referring to the table below.

Finder LED	M	A	△	1000	500	250	125	60	30	15	8	4	2	1	▽	B
IC_3 pin No.	㊿	㊶	㊷	㊸	㊹	㊺	㊻	①	②	③	④	⑤	⑥	⑦	⑧	⑨
Joint part No.	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17

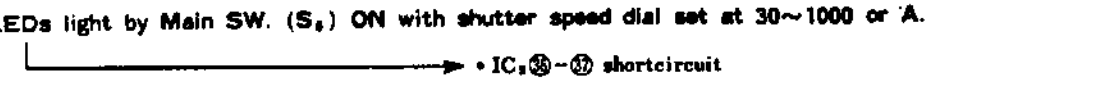
5 Self-timer LED lights with Main SW. (S_8) ON.



6 LEDs light with Main SW. (S_8) ON.


• Metering SW. (S8 or S1) and GND shortcircuit
• AE lock SW. (S14) and GND shortcircuit
• ℓ13 (Yellow) and GND shortcircuit ····· J-4
• ℓ36 (Brown) and GND shortcircuit ····· J-6

7 LEDs light by Main SW. (S_8) ON with shutter speed dial set at 30~1000 or A.



[8] When voltage is under specified B.C voltage, shutter release lock does not operate with LEDs ON·····No mode LED blinks.

- IC_1 ③ soldering failure
- IC_2 ㉓ soldering failure

[9] When decreasing voltage, mode LED remains ON; does not blink
·····No LEDs light when release locked.

- IC_1 ② soldering failure
- IC_2 ㉔ soldering failure

[C] Shutter failure

[C-1] Shutter curtains travel in high speed, or without slit

[1] LED indication is normal. Shutter curtains travel without slit in M and A modes.

Does shutter fully open when releasing with ℓ_{14} (white) and J_3 short-circuited? ※5

NO →
- ℓ_{13} (Red) soldering failure or disconnection ····· [I-2]
- ℓ_{14} (White) soldering failure or disconnection ····· [K-4]
- SL_2 (S-Mg) absorptive surface dirty
- SL_2 (S-Mg) absorptive surface failure.
- The 2 nd curtain stop lever spring is off

YES →
- J_3 soldering failure ····· [F-6]
- Q_3 soldering failure or element failure ····· [F-6]
- IC_2 ㉘ soldering failure

[2] In A mode shutter operates in high speed with △ blinking.

(1) LED indication remains the same when changing AV, film speed and luminance.

Voltage check on soldering area of ℓ_7 (Green) : 0.9~1.1V ※6

NO →
- SV contact; contact failure
- ℓ_7 (Green) soldering failure or disconnection ····· [C-9]
- ℓ_7 (Green) and GND shortcircuit ····· [C-9]
- VR_4 soldering failure or element failure ····· [H-5]
- IC_1 ⑰, ㉙, ㉝: soldering failure

YES ↓

- IC_1 ⑥, ⑧, soldering failure
- IC_2 ⑰, ⑲ soldering failure

Is 288 mV adjustment possible corresponding to A/D conversion standard voltage adjustment?

NO →
- R_3 soldering failure or element failure ····· [J-8]
- VR_3 soldering failure or element failure ····· [J-8]
- IC_1 ㉗, ㉘ soldering failure

YES →
- C_3 soldering failure ····· [F-7]
- C_9 soldering failure ····· [G-7]
- IC_1 ⑭ soldering failure
- IC_1 short-circuited between pins ④-⑤, ⑤-⑥, ⑥-⑦, ⑦-⑧, ⑬-⑭, ⑭-⑮, ⑮-⑯, ㉓-㉔, ㉖-㉗, ㉜-㉝

(2)LED indication remains the same only when changing AV

·····Check by rotating aperture ring.

→ • ℓ_3 (Orange) soldering failure or disconnection ····· I-5

• MC brush deformed (Printed wiring short-circuited)

(3)LED indication remains the same only when film speed changing

·····Check by rotating film speed ring.

→ • ℓ_4 (Brown) soldering failure or disconnection ····· C-9

(4)LED indication does not change in accordance with luminance

·····Check by changing luminance.

→ • SPC_1 A and K shortcircuit ····· G-8

• IC_1 ㉑–㉒ shortcircuit

3LEDs are normal. In M and A modes shutter curtains travel without slit when set to high speed. ·····Normal at slow speed

→ • Trigger SW. (S_3) contact failure

• ℓ_{11} (Orange) soldering failure or disconnection····· K-9

• ℓ_{13} (Orange) connected to the next printed wiring (IC_2⑬) by mistake ····· K-9

4In A and M modes, shutter speed remains 1/60 with LEDs "M" and "1/60" lighting.

→ • Looseness of auto lock button guide on TV P.C board.

• GND contact at TV SW.; contact failure

5LED indication is normal. Occasional high shutter speed under darkness.

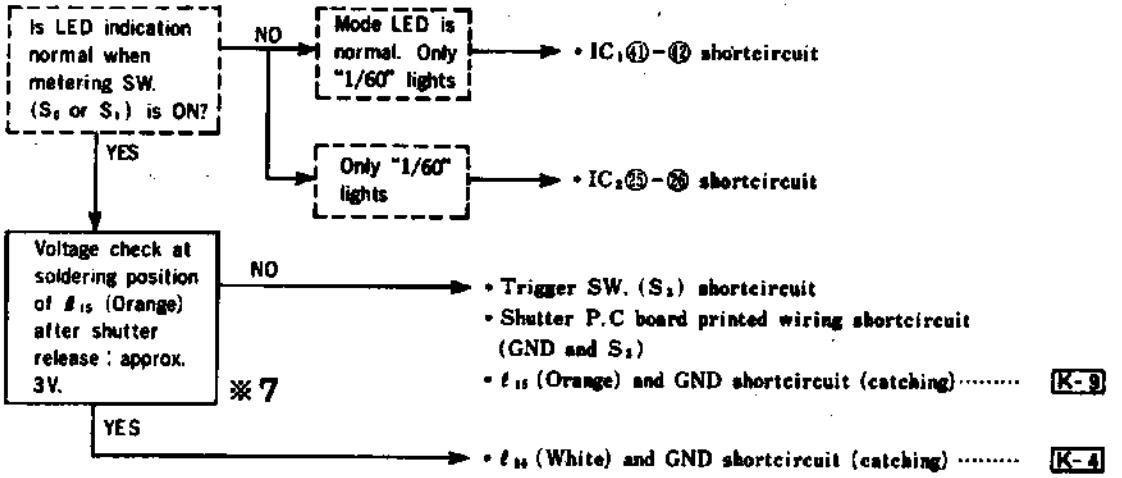
→ • $IC_1$⑦ soldering failure

• IC_2⑱ soldering failure

C-2 Shutter remains open

[1]LED indication is normal. Shutter stays open in M and A modes

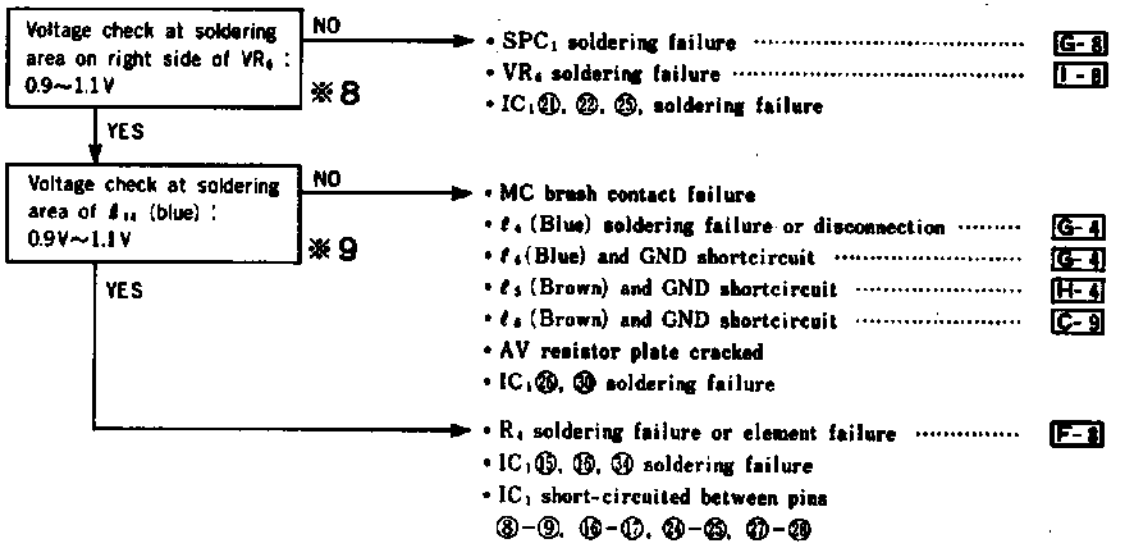
·····Slow shutter speed limit, 4 sec., does not operate.


Is LED indication normal when metering SW. (S_6 or S_1) is ON?
NO
Mode LED is normal. Only "1/60" lights
• IC_1㊶-㊷ shortcircuit
YES
Only "1/60" lights
• IC_2㉕-㉖ shortcircuit
Voltage check at soldering position of ℓ_{15} (Orange) after shutter release : approx. 3V.
NO
※7
• Trigger SW. (S_2) shortcircuit
• Shutter P.C board printed wiring shortcircuit (GND and S_2)
• ℓ_{15} (Orange) and GND shortcircuit (catching)····· K-9
YES
• ℓ_{16} (White) and GND shortcircuit (catching) ····· K-4

[2]In A mode, shutter stays open with ▽ blinking

·····Slow shutter speed limit does not operate.

(1)LED indication remains the same when AV, film speed, and luminance changing.


Voltage check at soldering area on right side of VR_6 : 0.9~1.1V
NO
※8
• SPC_1 soldering failure ····· G-8
• VR_6 soldering failure ····· I-8
• IC_1㉑, ㉒, ㉕, soldering failure
YES
Voltage check at soldering area of ℓ_{14} (blue) : 0.9V~1.1V
NO
※9
• MC brush contact failure
• ℓ_4 (Blue) soldering failure or disconnection ····· G-4
• ℓ_6 (Blue) and GND shortcircuit ····· G-4
• ℓ_5 (Brown) and GND shortcircuit ····· H-4
• ℓ_8 (Brown) and GND shortcircuit ····· C-9
• AV resistor plate cracked
• IC_1㉘, ㉚ soldering failure
YES
• R_4 soldering failure or element failure ····· F-8
• IC_1㉕, ㉖, ㉞ soldering failure
• IC_1 short-circuited between pins ⑧-⑨, ⑯-⑰, ㉔-㉕, ㉗-㉘

(2)LED indication remains the same only when changing AV

·····Check by rotating aperture ring.

• ℓ_8 (Brown) soldering failure or disconnection. ····· H-4

C-3 Others

1 In A mode, LED indication and shutter speed operate as slow shutter speed
·····Over exposure.

(1) LEDs and shutter speed remain the same only when film speed changing
·····Check by turning film-speed ring.

- ℓ_2 (Orange) soldering failure or disconnection
- ℓ_2 (Orange) and ℓ_4 (Blue); soldering area shortcircuit (on AV resistor plate)····· F-3, G-4
- ℓ_6 (Brown) and ℓ_7 (Green); soldering area shortcircuit (on SV resistor plate)····· C-9
- Deformed brush on SV resistor plate (printed wiring shortcircuit)
- IC_1 ㉘–㉙ shortcircuit

(2) LEDs and shutter speed remain the same when AV and film speed changing.

Over exposure by approx. 3 EV.

- ℓ_3 (Orange) and ℓ_5 (Brown); soldering area shortcircuit (on AV resistor plate) ····· F-3, H-4
- ℓ_6 (Brown) and ℓ_8 (Orange); soldering area shortcircuit (on SV resistor plate) ····· C-9

Over exposure by approx. 1 EV.

- IC_1 ㉜ soldering failure

2 In M mode, shutter does not operate in accordance with speed set by shutter speed dial
·····LEDs indicate operating shutter speed.

- Check if brush is deformed on TV SW.
- By turning shutter speed dial, check voltage of printed wiring (T_A~T_D) or voltage IC_2 ㉟~㊳. Then compare to the table below.

Shutter speed setting and corresponding voltage on printed wiring in normal condition.

Shutter speed and LED indication	Voltage of printed wiring on TV P.C board			
	T_A IC_2㉟	T_B IC_2㉞	T_C IC_2㉝	T_D IC_2㉞
M1000	3.0	3.0	0	0
M 500	3.0	0	0	0
M 250	3.0	0	3.0	0
M 125	0	0	3.0	0
M 60	0	3.0	3.0	0
M 30	0	3.0	0	0
M 15	0	3.0	0	3.0
M 8	3.0	3.0	0	3.0
M 4	3.0	0	0	3.0
M 2	0	0	0	3.0
M 1	0	0	3.0	3.0
B	0	3.0	3.0	3.0
A	3.0	3.0	3.0	0

- By brush contact failure on TV SW, the voltage becomes 3.0 V resulting in different shutter speed and LED indication.
- Replace flexible P.C board set with new one, when shutter is failure with voltage within the range.

3 Excessive deflection of LED indication and shutter speed from AV and film speed setting.

- ℓ_2 (Orange) and GND shortcircuit ····· I-5
- ℓ_8 (Orange) and GND shortcircuit ····· C-9

D Self-timer failure

1 Shutter release without delay

·····No self-timer LED blinks.

- Self-timer SW. (S_{10}) contact failure
- ℓ_{11} (Blue) soldering failure or disconnection ····· F-5
- Looseness of self-timer plate screw
- IC_2⑩ soldering failure

2 Shutter release without delay

·····Self-timer LED blinks after shutter release.

- $IC_1$⑨–⑩ shortcircuit
- IC_2⑮–⑯ shortcircuit

3 Shutter release with delay for 10-sec

·····No self-timer LED blinks.

Voltage check at soldering area of ℓ_{17} (Green) : approx. 3.0V ※10

NO →
- R_8 soldering failure or element failure ····· E-7
- Shortcircuit between self-timer LED (anode) and GND

YES →
- ℓ_{14} (Grey) soldering failure or disconnection ····· J-4
- ℓ_{17} (Green) soldering failure or disconnection ····· I-2
- LD_{17} (self-timer LED) failure
- $IC_1$⑨, ⑫ soldering failure
- IC_2⑯ soldering failure

4 Shutter release impossible with self-timer

·····Self-timer LED does not blink.

- IC_1⑬ soldering failure

5 Shutter operates in high speed with self-timer in A mode.

- $IC_1$⑧–⑨ shortcircuit
- IC_2⑯–⑰ shortcircuit

6 Shutter release with delay for 10-sec., locking AE.

- Self-timer plate printed wiring shortcircuit
- IC_2⑩–⑪ shortcircuit

7 Self-timer operates always.

- Self-timer SW. (S_{10}) deformation. (Shortcircuit between GND and printed wiring)
- ℓ_{11} (Blue) and GND shortcircuit (catching)····· F-5

E AE lock failure

1 AE lock does not operate.

→ • AE lock SW. (S_{14}) contact failure
• ℓ_{13} (Blue) soldering failure or disconnection ····· I - 4
• Looseness of self-timer plate screw
• IC_2⑪; soldering failure

2 AE lock operates always.

→ • AE lock SW. (S_{14}) deformation
(Shortcircuit between GND and printed wiring)
• ℓ_{12} (Yellow) and GND shortcircuit (catching) ····· I - 4

3 AE lock operates only after shutter release
·····Shutter release is impossible with AE lock SW. locked.

→ • IC_2⑪-⑫ shortcircuit

F PV (preview) failure.

1 Stop-down metering is impossible with PV button pushed in.

→ • PV SW. (S_9) contact failure
• ℓ_9 (Light blue) soldering failure or disconnection··· G-3
• IC_1㉕ soldering failure

2 Pushing PV button in high luminance makes ▽ blinking, and keeping shutter open in A mode. Pushing PV button in low luminance makes △ blinking, and operating shutter in high speed in A mode.

→ • IC_1㉞-㉟ shortcircuit

3 Undesired stop-down metering

→ • PV SW. (S_9) deformation (shortcircuit with GND)
• ℓ_9 (Light blue) and GND shortcircuit (catching)··· G-3

G Flash firing failure. (Check in A mode using AEF 280PX)

I LED indication is normal with flash fully charged. But flash does not fire properly.

(1) Flash fires manually always. FDC signal is not indicated.

……Time counter does not indicate normally/long when checking strobe level)

- SPC_2 lead wires (Purple, White) disconnection …… F-9
- SPC_2 failure …… F-9
- C_2 shortcircuit …… G-5
- VR_3 soldering failure or element failure …… I-6
- IC_1 ④, ⑤, ⑱, ⑲, ㉚, ㉛, ㉜, soldering failure
- IC_2 ⑳, ㉒, soldering failure
- IC_1 ⑲–⑳, ㉒–㉓, ㉖–㉗, ㉘–㉙ shortcircuit
- IC_2 ⑳–㉑, ㉑–㉒ shortcircuit

(2) Insufficient firing with FDC signal ON

……Time counter shows short value when checking strobe level.

- SPC_2 lead wire (White) and GND shortcircuit …… F-9
- C_1 soldering failure or element failure …… G-5
- R_1 soldering failure or element failure …… H-6
- SPC_1 shortcircuit
- IC_1 ㉔ soldering failure
- IC_1 ⑱–⑲, ㉙–㉚, ㉚–㉛, ㉛–㉜ shortcircuit

(3) Excessive firing with normal indication of FDC

……Time counter shows long value when checking strobe level.

- R_2 soldering failure or element failure …… I-6
- IC_1 ⑰–⑱ shortcircuit

(4) Flash does not fire. Shutter stays open.

Contact check of X contact (SX_2) at sync terminal

NO →
- X contact (SX_2); contact failure
- ℓ_{25} (Purple) soldering failure or disconnection …… D-5
- Sync terminal failure

YES →
- F_1 terminal contact failure
- Electro shock guard SW. (SX_1) contact failure
- ℓ_{27} (Pink) soldering failure or disconnection …… D-5
- ℓ_{28} (Pink) soldering failure or disconnection …… I-4

(5) Flash does not fire. Shutter operates as Auto X.

- IC_1 ㊲–㊳ shortcircuit

[2] LED indication failure with flash fully charged

(1) "1/60" does not blink. Metered shutter speed LEDs light on. Shutter does not operate as Auto X ····· Flash does not fire depending on camera other than in M mode.

- F_3 terminal contact failure
- ℓ_{30} (White) soldering failure or disconnection ····· G-5
- ℓ_{30} (White) and GND shortcircuit (catching) ····· G-5
- $IC_1$①, ㊶ soldering failure
- IC_2㉕ soldering failure

(2) "1/60" does not blink; remains ON. Flash fires with shutter operated as Auto X.

Proper firing
- IC_1㊸ soldering failure
- IC_2㉗ soldering failure

Manual firing
- ℓ_{30} (White) and ℓ_{31} (Brown) reversely soldered····· G-5, H-5

(3) "1/60" does not blink. Metered shutter speed LEDs blink. Firing without shutter operated as Auto X.

- IC_1㊹ soldering failure
- IC_2㉖ soldering failure

(4) "1/60" blinks. Mode LED (A) does not blink. Manual firing with shutter operated as Auto X.

- F_3 terminal contact failure
- ℓ_{31} (Brown) soldering failure or disconnection ····· H-5
- ℓ_{31} (Brown) and GND shortcircuit (catching) ····· H-5
- IC_1㊽ soldering failure

(5) No mode LED lights

- IC_1㊷ soldering failure
- IC_2㉘ soldering failure

(6) Flash does not fire. Mode LED, metered shutter speed LEDs, and "1/60" blink.

- Ground is not connected at hot shoe
- ℓ_{25} (Black) soldering failure or disconnection ····· K-8
- ℓ_{24} (Black) soldering failure or disconnection ····· J-4

(7) "1/60" does not blink. Metered shutter speed LEDs light on. Shutter does not operate as Auto X. ····· Monitor lamp of flash unit will not light up.)

- X contact (Sx_2) shortcircuit
- Sync terminal shortcircuit
- ℓ_{27} (Pink) and GND shortcircuit (catching)····· D-5
- ℓ_{28} (Pink) and GND shortcircuit (catching)····· I-4
- ℓ_{29} (Purple) and GND shortcircuit (catching)····· D-5

H Failure with Motor Drive using

1 Winding is impossible by motor drive.

- W_3 contact failure
- W_3 riveting failure or soldeirng failure
- IC_1⑱ soldering failure

2 No LEDs light with metering SW. ON of Motor Drive.

- W_1 contact failure
- W_1 riveting failure or soldering failure
- IC_2⑰ soldering failure

3 Shutter is not released by Motor Drive.

- W_2 contact failure
- W_2 riveting failure or soldering failure

I Failure with Data Back using

1 Shutter is not released with Multi-Function Back in F Ⅱ mode.

- D_2 terminal contact failure
- D_3 terminal contact failure
- ℓ_{19} (Black) soldering failure or disconnection ····· D-2
- ℓ_{20} (Grey) soldeirng failure or disconnection ····· D-1

2 Imprint indicator does not light

- D_1 terminal contact failure
- ℓ_{18} (Brown) soldering failure or disconnection ····· D-1
- IC_2⑯ soldering failure

3 Shutter releases when winding with Multi-Function Back attached.

- ℓ_{19} (Black) and ℓ_{20} (Grey) connected reversely D-2, D-1

J Piezo buzzer failure

1 Piezo buzzer does not sound

- Piezo buzzer lead wires (Red, Black) soldering failure or disconnectiton ····· F-9
- ℓ_{41} (Red) soldering failure or disconnection ····· C-9
- IC_2⑬ soldeirng failure

■ IC pin voltages

Measuring conditions: ● Supply voltage···3V
● A mode···Measure with no lens attached in the room around ASA 100.
● M mode···Only difference from A mode is given in the table. (shutter speed is at 1/1000 sec.)

Pin No.	Winding completed metering (S_6 ON)	Shutter released metering (S_6 ON)
IC_1 1	0.07	0.07
2	3.0	3.0
3	3.0	3.0
4	A mode 0.07 M mode 0.8	A mode 0.07 M mode 0.8
5	3.0	3.0
6	1.2~1.6	1.2~1.6
7	3.0	3.0
8	1.1~1.3	1.1~1.3
9	0	0
10	0	0
11	0	0
12	1.6~2.0	1.6~2.0
13	0	0
14	1.15	1.15
15	1.15	1.15

Pin No.	Winding completed metering (S_6 ON)	Shutter released metering (S_6 ON)
IC_1 16	1.26	1.26
17	0	0
18	0.05	0.05
19	0.1	0.1
20	0.24	0.24
21	0.05	0.05
22	0.06	0.06
23	0.5	0.5
24	0	0
25	1.08	1.08
26	1.03	1.03
27	1.15	1.15
28	1.44	1.44
29	1.04	1.04
30	1.08	1.08

Pin No.	Winding completed meterering (S_6 ON)	Shutter released metering (S_6 ON)
IC_1 31	1.0	1.0
32	0.94	0.94
33	0.16	0.16
34	1.08	1.08
35	0.7~1.5	0.7~1.5
36	3.0	3.0
37	3.0	3.0
38	0	0
39	0	0
40	1.5	1.5
41	0	0
42	3.0	3.0
43	3.0	3.0
44	3.0	3.0

● There is possibility having difference voltage at the state of S_2 ON and S_6 OFF(metering hold).
● Above values are obtained by actual measuring, pin voltages vary slightly according to the measured camera.

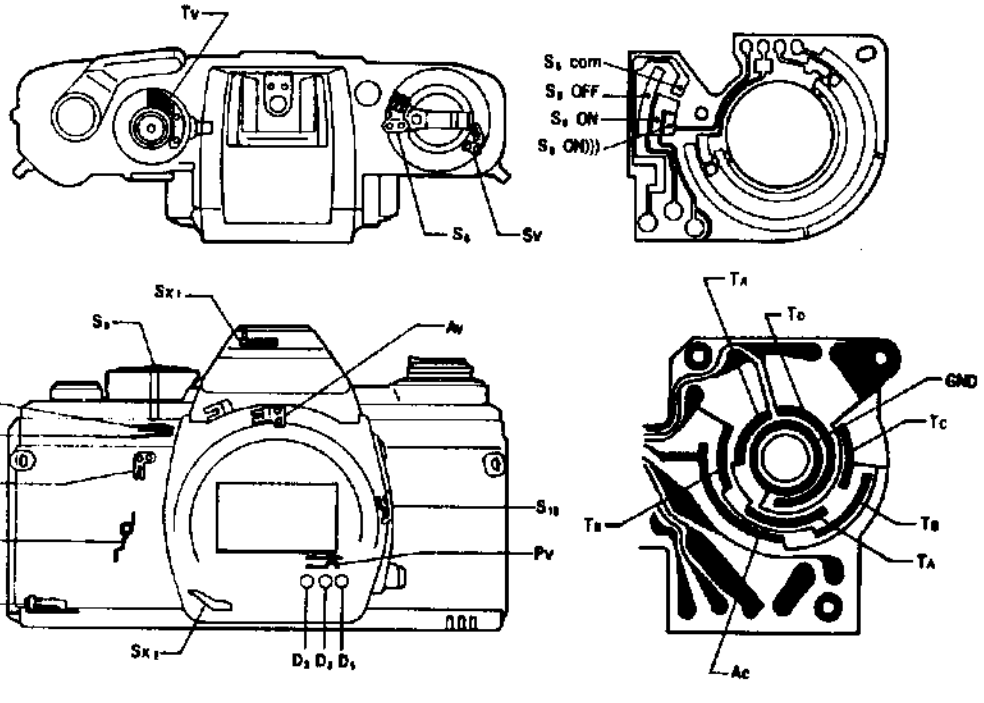
Pin No.	Winding completed metering (S_8 ON)	Shutter released metering (S_8 ON)
IC_2 1	3.0	3.0
2	3.0	3.0
3	3.0	3.0
4	3.0	3.0
5	3.0	3.0
6	3.0	3.0
7	3.0	3.0
8	3.0	3.0
9	3.0	3.0
10	0	0
11	3.0	3.0
12	0	3.0
13	3.0	3.0
14	0	0
15	0	0
16	0	0
17	1.1~1.3	1.1~1.3
18	3.0	3.0
19	1.2~1.6	1.2~1.6

Pin No.	Winding completed metering (S_8 ON)	Shutter released metering (S_8 ON)
IC_2 20	3.0	3.0
21	3.0	3.0
22	A mode 0.07 M mode 0.8	A mode 0.07 M mode 0.8
23	3.0	3.0
24	3.0	3.0
25	0.07	0.07
26	3.0	3.0
27	3.0	3.0
28	3.0	3.0
29	2.2	2.2
30	0.06	0.06
31	3.0	3.0
32	3.0	3.0
33	A mode 3.0 M mode 0	A mode 3.0 M mode 0
34	3.0	3.0
35	3.0	3.0
36	0	0
37	0.6~1.8	0.6~1.8
38	3.0	3.0

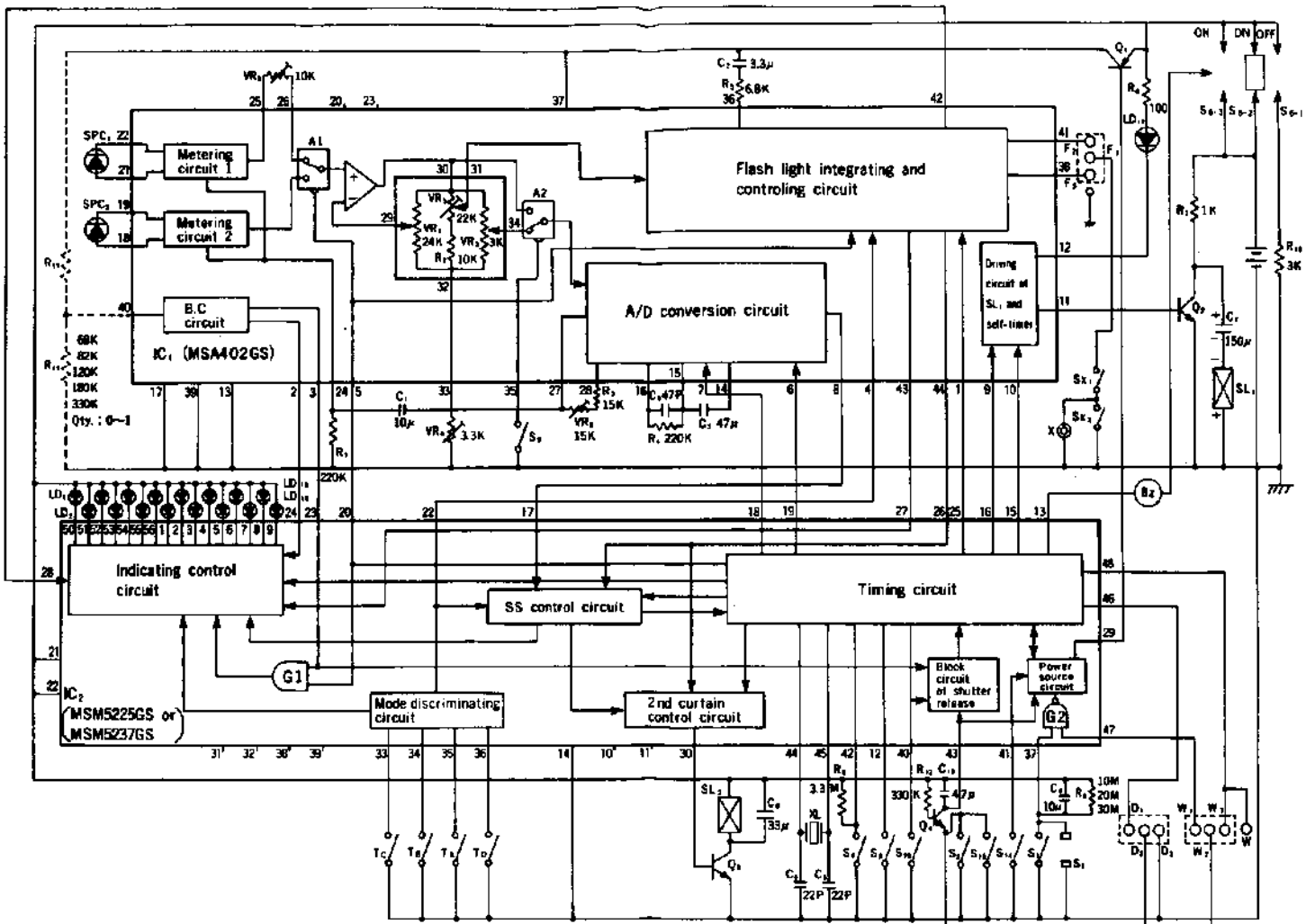
Pin No.	Winding completed metering (S_8 ON)	Shutter released metering (S_8 ON)
IC_1 39	3.0	3.0
40	3.0	3.0
41	3.0	3.0
42	2.2	0
43	3.0	3.0
44	1.5	1.5
45	1.0	1.0
46	3.0	3.0
47	3.0	3.0
48	0.1~0.5	0
49	3.0	3.0
50	A mode 3.0 M mode 1.2	A mode 3.0 M mode 1.2
51	A mode 1.2 M mode 3.0	A mode 1.2 M mode 3.0
52	3.0	3.0
53	A mode 3.0 M mode F	A mode 3.0 M mode F
54	1.2	1.2
55	3.0	3.0
56	3.0	3.0

■Operation of switches

Mark	Name	Function	Condition of operation
S_0	Touch switch	Setting metering and calculating circuit to ON, lighting finder LEDs.	ON by touching operating button.
S_1	Metering switch	The same as S_0.	ON by depressing operating button.
S_2	Release switch	Starting of circuits operating.	
S_3	Trigger switch	Counting start of exposure time with OFF.	OFF right after shutter operation start.
S_4	Reset switch	• Prevention against error during winding. • Reset of circuit. • Control of motor drive.	OFF with winding completed. ON with preset mech. returning after 2nd curtain travelled.
S_6	Main switch	• ON/OFF of circuit power source and ON))). • Power supplying.	Operating of main switch lever.
S_9	PV switch	Changing of full aperture or stop down metering.	ON with PV button depressed.
S_{10}	Self-timer switch	Setting circuit components to self-timer mode.	ON by pulling up self-timer lever.
S_{13}	Remote control switch	The same as S_2.	
S_{14}	AE lock switch	• Holding of exposure value and indication. • Slow synchronization using exclusive flash.	ON by pushing the self-timer lever down.
S_{X1}	Electro-shock guard switch	Prevention against electro-shock.	ON with flash mounted onto hot shoe.
S_{X2}	X contact	Firing of flash.	ON with 1st curtain travelled completely. OFF with 2nd curtain travelled completely.
T_A / T_D	TV switch	• Circuit changing of A, M, B, mode. • LED light changing of A, M, B mode.	By turning shutter speed dial.

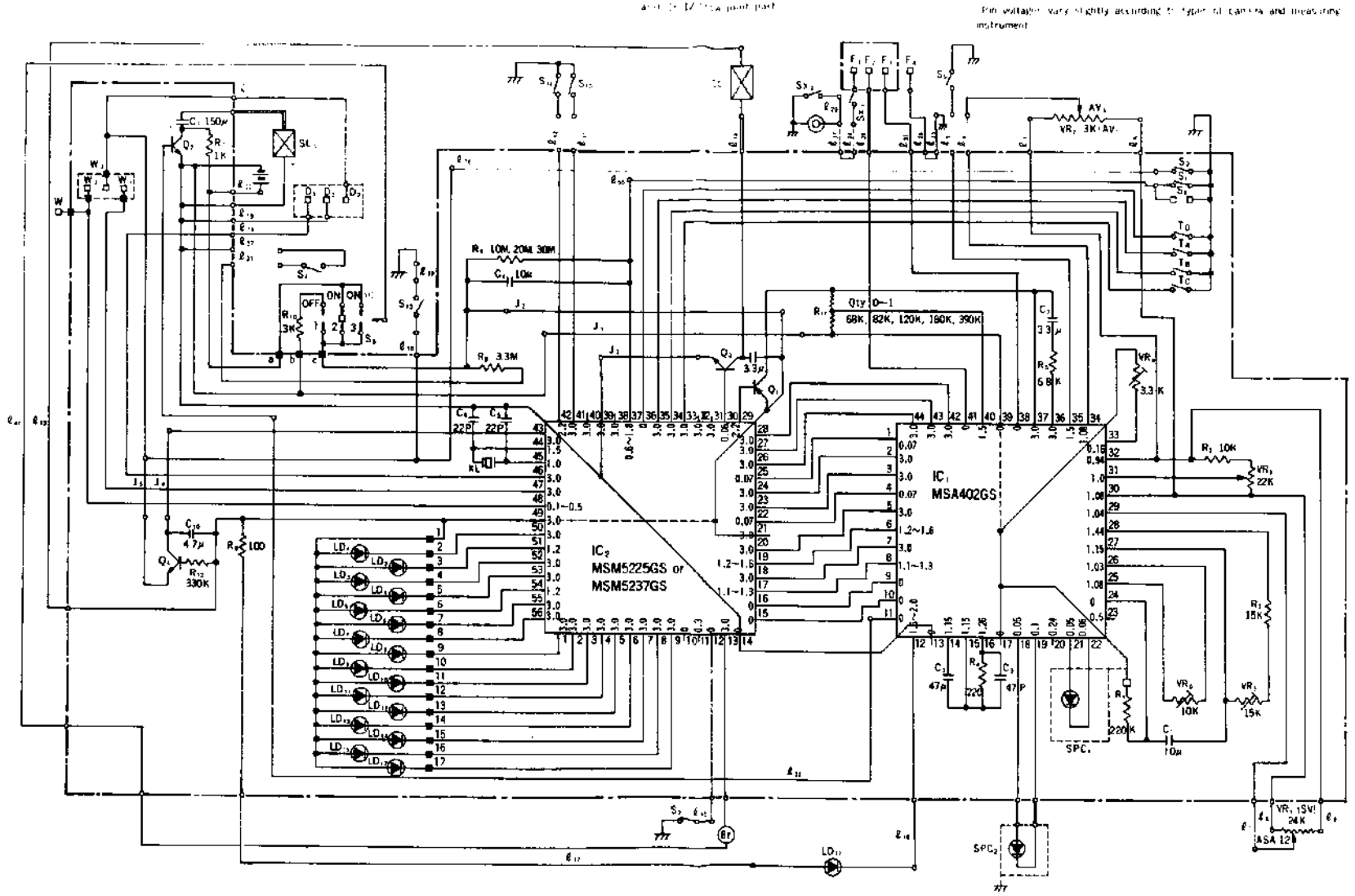


■ X-500 X-570 Circuit Diagram



Symbol	Name	Symbol	Name	Symbol	Name
S_1	Touch SW	S_{5-1}	Main SW (X-570)	S_{11}	X contact
S_2	Metering SW	S_6	PX SW	T_A	
S_3	Release SW	S_{6-1}	Self-timer SW	T_B	TX SW
S_4	Trigger SW	S_{6-2}	Reverse SW	T_C	
S_5	Reset SW	S_{6-3}	AF lock SW	X_1	X'tal (32.768kHz)

Name	Function	Name	Function	Name	Function	Name	Function	Name	Function	Name	Function	Name	Function	Name	Function	Name	Function
IC_1	Metering calculation, A/D conversion, flash control, and others	SL_1	Shutter magnet	R_1	Touch SW adjustment	Q_1	Prevention against error using SPC_1	L_1	Prevention against touch SW noise	C_1	Prevention against counter-electromotive force of SL_1	C_{11}	Prevention against release signal chattering	W_1	"SPC$_1$ release signal	F_1	Firing of flash
IC_2	Timing control SS control calculation	VR_1	SS setting	R_{11}	B.C lock voltage adjustment	Q_2	Power source	C_2	SL_1 oscillation	C_2	Prevention against SL_1 oscillation	C_{12}	Prevention against EC oscillation	W_2	"MP$_1$ warning signal	F_2	Flash ready signal
		VR_2	Flash level setting	Q	Power source drive	C_3	Capacitor	L_2	SL_1 drive	C_3	Prevention against IC malfunction	D_1	Diode against SPC_1 reverse	D_1	Reset signal	F_3	Flash control
		VR_3	Flash level setting													W	Winder contact


IC₂
MSM5225GS or
MSM5237GS
IC₁
MSA402GS
SPC₁
SPC₂
ASA 12

■Lead wire

Symbol	Part No.	Type.
ℓ_2	9391-0507-03	φ0.05/7 wires ℓ=70
ℓ_4	9391-0507-06	φ0.05/7 wires ℓ=70
ℓ_5	9391-0507-01	φ0.05/7 wires ℓ=75
ℓ_6	9391-0507-01	φ0.05/7 wires ℓ=85
ℓ_7	9391-0507-05	φ0.05/7 wires ℓ=90
ℓ_8	9391-0507-03	φ0.05/7 wires ℓ=95
ℓ_9	9391-0807-11	φ0.08/7 wires ℓ=135
ℓ_{10}	9391-0807-08	φ0.08/7 wires ℓ=40
ℓ_{11}	9391-0807-06	φ0.08/7 wires ℓ=95
ℓ_{12}	9391-0807-04	φ0.08/7 wires ℓ=95
ℓ_{13}	9391-0807-02	φ0.08/7 wires ℓ=105
ℓ_{14}	9391-0807-09	φ0.08/7 wires ℓ=75
ℓ_{15}	9391-0807-03	φ0.08/7 wires ℓ=105
ℓ_{16}	9391-0807-08	φ0.08/7 wires ℓ=65
ℓ_{17}	9391-0807-05	φ0.08/7 wires ℓ=115
ℓ_{18}	9391-0807-01	φ0.08/7 wires ℓ=40
ℓ_{19}	9391-0807-00	φ0.08/7 wires ℓ=35
ℓ_{20}	9391-0807-08	φ0.08/7 wires ℓ=55
ℓ_{21}	9391-0807-04	φ0.08/7 wires ℓ=160
ℓ_{22}	9391-0807-02	φ0.08/7 wires ℓ=25
ℓ_{23}	9391-0807-00	φ0.08/7 wires ℓ=50
ℓ_{24}	9391-0807-00	φ0.08/7 wires ℓ=80
ℓ_{27}	9391-0807-10	φ0.08/7 wires ℓ=80
ℓ_{28}	9391-0807-10	φ0.08/7 wires ℓ=50
ℓ_{29}	9391-0807-07	φ0.08/7 wires ℓ=65
ℓ_{30}	9391-0807-09	φ0.08/7 wires ℓ=65
ℓ_{31}	9391-0807-01	φ0.08/7 wires ℓ=70
ℓ_{32}	9391-0807-05	φ0.08/7 wires ℓ=35
ℓ_{35}	9391-0807-01	φ0.08/7 wires ℓ=70
ℓ_{36}	9391-0807-08	φ0.08/7 wires ℓ=70
ℓ_{37}	9391-0807-11	φ0.08/7 wires ℓ=170
ℓ_{39}	9391-0507-00	φ0.05/7 wires ℓ=25
ℓ_{41}	9391-0507-02	φ0.05/7 wires ℓ=40

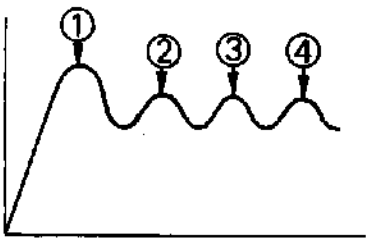
■Electric parts

Symbol	Part No.	Type.
Q_1	9363-1032-01	2SA1162 SO, SY, SG
Q_2	9362-1261-02	2SD1048 X7, X8
Q_3, Q_4	9362-1032-01	2SC2712 LO, LY, LG, LL
XL	9373-4162-01	C-002R
SPC_1	2024-0491-01	
R_4, R_1	9432-2246-62	1/8W 220KΩ
R_3	9432-1036-62	1/8W 10KΩ
R_3	9432-1536-62	1/8W 15KΩ
R_5	9422-6826-62	1/8W 6.8KΩ
R_6	9422-1016-62	1/8W 100Ω
R_7	9422-1026-62	1/8W 1KΩ
R_8	9432-3357-61	1/8W 3.3MΩ
R_9	9432-1068-61	1/8W 10MΩ
	9432-2068-61	1/8W 20MΩ
	9432-3068-61	1/8W 30MΩ
R_{11}	9422-6836-62	1/8W 68KΩ
	9422-8236-62	1/8W 82KΩ
	9422-1246-62	1/8W 120KΩ
	9422-1846-62	1/8W 180KΩ
	9422-3946-62	1/8W 390KΩ
R_{12}	9431-3348-61	1/16W 330KΩ
VR_3	9472-2239-66	EVM-04G 22KΩ
VR_4	9472-3329-63	EVM-14G 3.3KΩ
VR_5	9472-1539-63	EVM-14G 15KΩ
VR_6	9472-1039-63	EVM-14G 10KΩ
C_1	9565-1034-64	0.01μF/50V
C_2	9564-3324-61	3300PF/25V
C_3	9564-4734-64	0.047μF/25V
C_4	9564-1034-61	0.01μF/25V
C_5, C_6	9564-2204-65	22PF/25V
C_7	9531-1575-61	150μF/3.15V
C_8	9565-3338-65	0.033μF/50V
C_9	9565-4705-62	47PF/50V
C_{10}	9565-4738-65	0.047μF/50V

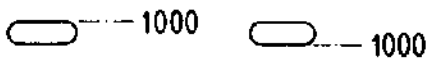
X-500, X-570 CODE No. 2024
0534
0420
Battery case base plate
0422
Av resistor plate
0418
Switch plate
0267 wiring base plate
4321 Pv plate
0153
Remote control terminal
9028
9027
5033
Sheet plate
Piezo buzzer
SW resistor plate
ON
OFF
Green
White
Red
Gray
Black
Brown
Orange
Blue
Purple
Pink
Yellow
Light Blue

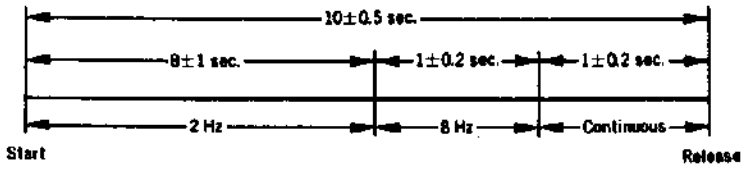
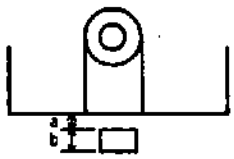
Inspection Standard

1. This standard specifies uniform performance levels for servicing in order to guarantee our product's quality to customers. Each item is detailed so that you can follow this standard when you receive inquiries from users or are asked for checks.
2. When delivery or acceptance inspections are required, do not directly apply this standard to the performance measurements, but refer to the corresponding standard (manual).
3. Some users, because of their taste or special purposes, may require adjustment of this standard. In this case, perform the adjustment according to the user's request whenever possible.

Check Item	Checkpoint	Description
Main switch		Operation·····Squeak, roughness, click feeling.
		Beeper ·····In "ON))) " position, a beeper should sound when touch SW. is turned ON or when AE is locked at shutter speed is slower than "1/30" in A mode. ·····Beeping should be free of irregular sound.
Winding	Winding lever	Operation·····There shall be no uneven action, roughness, sticking or contact, etc.
		Play ·····Shall be less than 0.7mm at the tip of the lever.
	Spool	Operation·····An even and smooth idle rotation shall enable the film to rewind securely.
		Spool torque···200 to 300g (②, ③, ④ as shown in the figure below) 
	Sprocket	Operation·····Slip, no-load rotation with the rewind button depressed.
Rewinding	Rewind button	Operation·····Lock, unlock (To be reset at the first half of rewinding), touch or contact.
		Lock position···Should be above, the bottom cover. Unlock position···Should be below the bottom cover surface.
	Rewind handle	Operation·····There shall be no uneven heavy movement, touch or contact, etc. ·····Effective spring action.
Film counter	Counter dial	Feed ·····The counter dial shall be 1 when the rear lid is closed and the film is wound twice. There shall be no contact, skip, etc.
		Return ·····There shall be no contact, etc., and the counter dial shall return to S.
		Index deviation···Shall be within the range as illustrated below:

<table>
<tr><th>Check Item</th><th>Checkpoint</th><th>Description</th></tr>
<tr><td>SLS</td><td></td><td>Operation……SLS signal should not come in sight from above in case of no film loaded.
……SLS signal should come in sight from above as illustrated below in case of a film loaded.
Counter…… 1 Counter……36 + 2

(In sight) (In sight)</td></tr>
<tr><td rowspan="5">Shutter</td><td>Operating button</td><td>● Operation……There shall be no roughness, contact, shock, etc., and the shutter button shall return to the original position.
● Touch SW., metering SW., release SW., should operate properly.
● Shutter should not be released while winding up.
Should be adle to be released with release lever returned to its original position after winding up.</td></tr>
<tr><td rowspan="3">Speed dial</td><td>Operation……There shall be no squeak, roughness, etc., and the dial shall rotate smoothly. Click feeling.
The dial should not rub top cover while rotating.</td></tr>
<tr><td>Index deviation…The center of speed and mode letters is level with the upper or lower line of the index.
 
1000 1000</td></tr>
<tr><td>Lock ……Dial shall be locked securely in A positions.
……Lock button shall not squeak and be pressed in smoothly.</td></tr>
<tr><td>Shutter curtain</td><td>● There shall be no pin holes, surplus adhesives, etc.
● Edge metal shall not come in sight at the shutter wound and released.
● 2 nd curtain edge metal shall not be in sight more than 0.5 mm on the way of winding, viewed from the body rear.</td></tr>
<tr><td>Operation……There shall be no contact between 1 st and 2 nd curtains, bounds inside the image frame, protrusion of the curtain, abnormal sound, etc.
The curtain should travel properly even if operating button is depressed fast, slowly, or strongly.</td></tr>
<tr><td colspan="3">Shutter speed
<table>
<tr><td>Dial position</td><td>1000</td><td>500</td><td>250</td><td>125</td><td>60</td><td>30</td><td>15</td><td>8</td><td>4</td><td>2</td><td>1</td><td>AUTO X</td></tr>
<tr><td>Reference value (ms)</td><td>0.98</td><td>1.95</td><td>3.91</td><td>7.81</td><td>17.0</td><td>31.3</td><td>62.5</td><td>125</td><td>250</td><td>500</td><td>1000</td><td>20.0</td></tr>
<tr><td>Standard</td><td>±0.5 EV</td><td>±0.4 EV</td><td colspan="2">±0.3EV</td><td>±0.17 0.42 EV</td><td colspan="6">±0.3EV</td><td>±0.2 0.23 EV</td></tr>
<tr><td>Tolerance (ms)</td><td>0.69 ~ 1.38</td><td>1.48 ~ 2.58</td><td>3.17 ~ 4.81</td><td>6.35 ~ 9.62</td><td>12.7 ~ 19.2</td><td>25.4 ~ 38.5</td><td>50.6 ~ 76.9</td><td>101 ~ 154</td><td>203 ~ 307</td><td>405 ~ 615</td><td>812 ~ 1230</td><td>17 ~ 23</td></tr>
</table>
● Curtain speed…Shall be within 13 ms (travelling time for 32 mm) for both 1 st and 2 nd curtains.
● Fluctuation…The difference between the maximum and minimum values in the center of the image plane (B range) shall be within 0.4 EV. (Measure five times repeatedly.)
● Uneveness of exposure…The difference of the exposure time between both ends (A, C ranges) and the image plane center (B range) shall be within 0.3 EV, and the difference between A and C ranges shall be within 0.4 EV.</td></tr>
<tr><td>Synchro</td><td>X delay time
<table>
<tr><th>Shutter speed</th><th>Item</th><th>Tolerance</th></tr>
<tr><td rowspan="2">1/60</td><td>X contact delay time ……A range</td><td>Over 0.4 ms</td></tr>
<tr><td>From X contact ON to 2 nd curtain start…B range</td><td>Over 2.4 ms</td></tr>
</table></td></tr>
</table>

<table>
<tr><th>Check Item</th><th>Checkpoint</th><th>Description</th></tr>
<tr><td rowspan="2">Self-timer</td><td>Lever</td><td>• Operation·····There shall be no roughness, squeak, etc. Click feeling.
• Self-timer SW. should not be turned ON by snapback of AE lock releasing.</td></tr>
<tr><td>Timer function</td><td>• Setting the lever to "OFF" after starting shall stop operation.
• With main SW. in ON position, the pulsating beeper should sound simultaneously with ON/OFF cycle of self-timer LED.
• ON/OFF cycle of the lamp (LED) and beeper shall satisfy the following time chart:
 
</td></tr>
<tr><td rowspan="3">Finder</td><td>View</td><td>Inclination of image, coincidence, fading on one side.</td></tr>
<tr><td>Diaphragm display</td><td>Diaphragm display shall be within the frame, and the adjacent character shall not be in sight at F5.6.
Display frame position···As illustrated.
 

Height··· $0 < a \leq b$
Right & Left···Within micro prism width</td></tr>
<tr><td>LED display</td><td>• All LEDs should be clear, be free of dust, shade.
• LED indication (ON/OFF) should be as follows corresponding to each mode of shutter speed dial.
<table>
<tr><th colspan="2">SS DIAL</th><th>A</th><th>1/1000~1</th><th>B</th></tr>
<tr><td rowspan="2">No electroflash</td><td>Mode indicator</td><td>"A" ON
("A" blinking when cells near exhaustion)</td><td>"M" ON
("M" blinking when cells near exhaustion)</td><td>"M" ON
("M" blinking when cells near exhaustion)</td></tr>
<tr><td>Metering indicator</td><td>Proper shutter speed indicator ON</td><td>Proper shutter speed indicator ON
Selected shutter speed indicator blinking</td><td>B indicator "*" ON</td></tr>
<tr><td rowspan="2">With Auto Electroflash 280PX (8808)</td><td>Mode indicator</td><td>"A" ON
("A" blinking when cells near exhaustion)</td><td>"M" ON
("M" blinking when cells near exhaustion)</td><td>"M" ON
("M" blinking when cells near exhaustion)</td></tr>
<tr><td>Metering indicator</td><td>"1/60" blinking
("1/60"-"▼" blinking with AE locked)</td><td>"1/60" blinking
(AE lock impossible)</td><td>B indicator
"*" blinking</td></tr>
<tr><td rowspan="2">With Auto Electroflash X-series</td><td>Mode indicator</td><td>No indicated
("A" blinking when cells near exhaustion)</td><td>No indicated
("M" blinking when cells near exhaustion)</td><td>No indicated</td></tr>
<tr><td>Metering indicator</td><td>"1/60" blinking
("1/60"-"▼" blinking with AE locked)</td><td>"1/60" blinking
(AE lock impossible)</td><td>B indicator
"*" blinking</td></tr>
</table>
Others·····
• The indication should light up for 15 seconds after the metering switch (S_0 or S_1) is OFF. The indication should remain ON for 15 seconds after shutter release.
• Immediately the self-timer operates and shutter is released, the indication should go off.
• 3 or more metered shutter speed LEDs should not light up.
• Over-range LED (▲) and under-range LED (▼) should go on and off independently. (Should not light up simultaneously with "1000" or "1" LED)
• In A mode, shutter speed should be within 1-4 sec. when under-range LED (▼) is ON. Should be slower than 4 sec. when (▼) is blinking.</td></tr>
</table>

Check item	Checkpoint	Description
Auto exposure	ASA dial	Operation……There shall be no touch or contact, roughness, etc., and the dial shall rotate smoothly, and shall engage with the lock groove securely.
		Dial deviation…Should be within the range shown below including play.

[1] Auto exposure and tolerance of LED display

1. LED display at M mode…Conforms to LED display at A mode as shown in Table 1 below:
2. EE level and LED display at A mode.

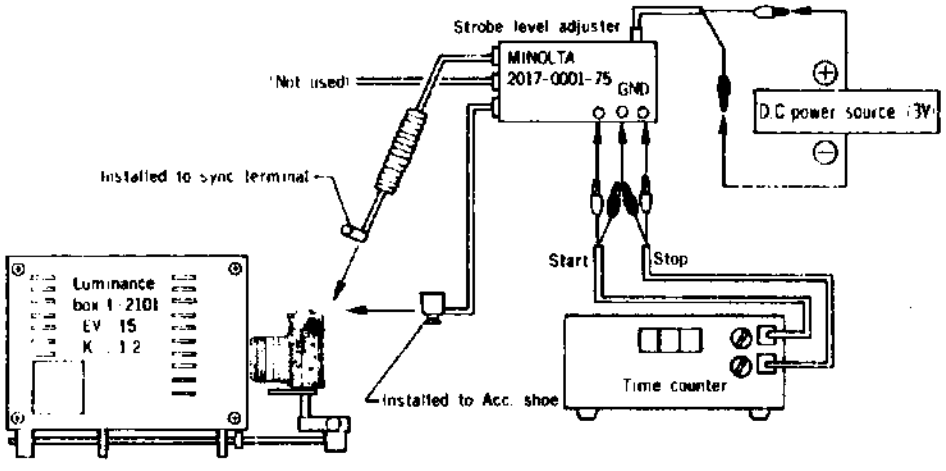
Table-1 (Lens : Master lens for S-auto, ASA : 100)

Luminance	Diaphragm	Tolerance of LED lighting				Tolerance of EE level	Variation
EV 5	F 4	4	☐	■	■	0 ± 0.8EV	0.4EV
		2	☐	☐	☐		
		1	■	■	☐		
EV 11	F 8	60	☐	■	■		
		30	☐	☐	☐		
		15	■	■	☐		
EV 14	F 5.6	1000	☐	■	■		
		500	☐	☐	☐		
		250	■	■	☐		

[2] Electric flash dimmer performance

1. Check by a luminance box (When the luminance box is other than L-2101, check in the following No. 2 methods.)

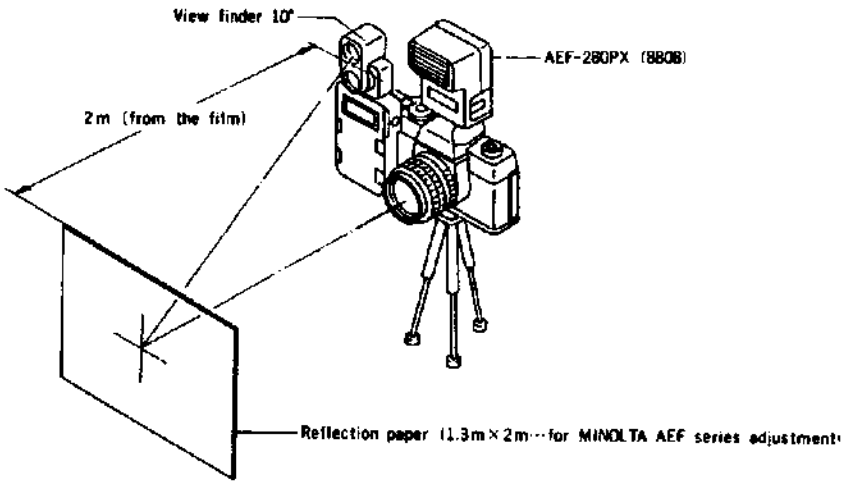
- **Standard**…The time counter display shall be within the range of **0.36 to 1.1ms**. (±0.8 EV for 0.63 ms reference value)
- **Checking procedures**…Set up a camera and measuring instruments as illustrated below to observe the time counter display when the shutter is released.



- **Camera**
  : Installation master lens for A-auto
  : Standard reflector (2017-0002-75) installation
  Shutter dial : A
  ASA : 100

- **Time counter (TC-1)**
  TRIG. slope A-CH : +
  B-CH : +
  TRIG. level A-CH : + 2
  B-CH : + 2

Check Item	Checkpoint	Description
Auto exposure		2. Checking by strobo tester (Model ST-Ⅲ) ● **Standard**···Strobo tester display shall be within the range of **F 5.6±0.8EV**. ● **Checking procedures**···Set up a camera and measuring instruments as illustrated below and release the shutter 30 seconds after the pilot lamp of the electric flash lights up to observe the display of the electric flash.



● **Camera**
: Installation master lens for A-auto
: Standard reflector (2017-0002-75) installation
Shutter dial : A
ASA : 100

● **Strobo tester**
MODE : NON. C

● **Electric flash**
Hi-Low changing
SW : Hi

[3] **High/Low speed limit**

1. High-speed limit···The exposure time should be within **0.69~1.38ms** with over-range LED ON in A mode. (Check with the shutter tester in A mode.)
2. Low-speed limit·····The exposure time should be within **4 seconds** with under-range LED ON in A mode. (Check by interrupting light to the light receiver in A mode.)

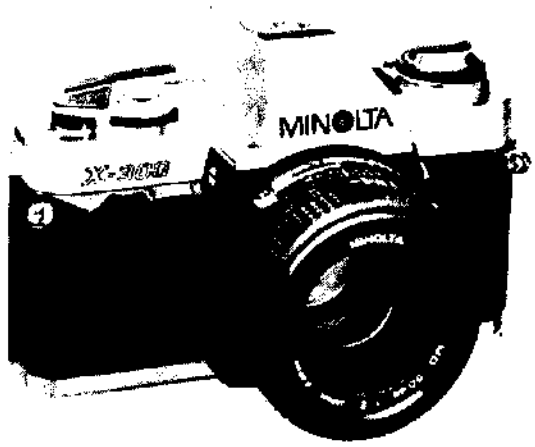
[4] **AE lock**

- Depressing AE lock should activate the camera's meter and viewfinder LED disply.
- AE lock should not operate in M mode.
- Exposure change with continuous shooting (A mode)

Standard·····Shutter speed variation should be within ±0.3EV with AE locked.
(For shutter speed faster than 1/500, variation should be within ±0.5EV)

Check Item	Checkpoint	Description
Focus	Mirror	Angle ·····45°±15′
		Operation·····There shall be no play, two-step movement, improper timing, bounds within the image plane, etc.
		Inclination ···Shall be within 0.4 mm for the light shield plate in the up position.
	Body back (Pressure plate back)	$43.72^{+0.01}_{-0.02}$ mm (from the pressure plate margin to the lens mounting surface)
	Finder back	43.565±0.025 mm
Others	MC levers	Operation·····There shall exist no roughness, contact or touch, abnormal sound, etc.
	Lens removal and installation	Check removal and installation torque (light or heavy), lock, unlock, play.
	Pre-view button	● Operation·····There shall exist no roughness, contact or touch, abnormal sound, etc. ● Winding up/shutter releasing operation should be normal with the button deprssed. ● Depressing the button should change the metering from full aperture to stop-down metering.
	Back cover	● Opening/closing···Back cover shall float spontaneously when the rewind knob is pulled up. There shall be no remarkable play when back cover is closed. ● Attaching/detaching···Should be easy with its release pin operating smoothly.
	Pressure plate	There shall be no distortion, protrusion, concave, foreign matter attachments, etc.
	Battery chamber	Contact·····There shall be no abrasion, corrosion, stains, etc.
	Compatibility with accessories	● Interchangeability with Multi-Function Back (8744) ···With 8744 installed, continuous sooting and camera control functions by 8744 shall be performed. ● Interchangeability with Motor Drive 1 (8740) and Auto Winder G (8731-200) ···With 8740 and 8743 installed, check the functions.
Voltage regulations, etc.		● Battery consumption with LEDs ON (4 LEDs lighting ON in M mode)····· 9.5 mA or less (Voltage 2.8 V) ● Leak current at main SW. ON or ON))·····10μA or less (Voltage 2.8 V) ● Leak current at main SW. OFF ·····2μA or less (Voltage 2.8 V)

X-300 〔2025-100〕
X-370 〔2025-300〕
……For U.S.A. & Canada



TYPE OF CAMERA

Electrically controlled 35 mm focal plane shutter SLR AE camera
Photography system : Aperture priority AE and manual photography
Standard lens : MD50mm F 1.2, MD50mm F 1.4, MD50mm F 1.7, MD50mm F 2
Lens mount : Minolta SLR bayonet mount
Film used : J135 rolled film
Size of image field : 24 mm × 36 mm

SHUTTER

Electrically controlled focal plane shutter (Traveling holizontally)
Shutter speed : Auto···4 sec. to 1/1000 sec.
Manual···1, 1/2, 1/4, 1/8, 1/15, 1/30, 1/60, 1/125, 1/250, 1/500, 1/1000 sec. and B (bulb).
Shutter speed dial : Click stop endless dial
Shutter release : Electromagnetic release, remote cord, wireless controller IR-1 can be mounted.
Shutter release locks in case of battery voltage drop.
With main switch at ON.
Self timer : Electronic self-timer starts by depressing the operating button.
Operation is indicated by camera-front LED blink.
Shutter release notice is given.
Self-timer operation can be canceled anytime before release.

EXPOSURE CONTROL

Light metering system : TTL center-weighted average metering.
Detector element : 1 Silicon photocell
Auto exposure interlock range : EV 1-18 (ASA/ISO 100 f/1.4 lens)
Film speed scale : ASA/ISO 12-3200 (locked every 1/3 step)
AE lock : Only for A mode.
: Operation by pushing self-timer lever down.
Metering switch : By touch switch or depressing of operating button slightly.
Memorizing of metering and finder LED indication for 15 sec. after the switch OFF.

VIEW FINDER

Type : SLR pentaprism type
Focusing screen : Center···Split-image and micro-prism
Periphery···Acute Matte
Viewfinder showing : 95% of 24 mm × 36 mm film-frame area
Magnification : 0.9 × (using 50 mm lens at ∞ setting)
Dioptric power : −1 diop.
Finder indication :
: Mode indication in use (A, M)
: Shutter speed scale with LED indication
: Slow shutter speed indication for 1-4 sec (▽)
: Over-/under- range LED indication blinking at 4 Hz (△/▽)
: B-setting indicator (✱)
: Setting shutter speed indicator (Shutter speed LED blinking at 4 Hz)
: Flash-ready signal (LED next to "60" blinking at 2 Hz)
: Battery check (by mode indication: Indicator ON when batteries are serviceable; blinking when near exhaustion; no LEDs light when exhausted)
Mirror : Slide-up quick return

FLASH SYNC

Sync speed : X contact, electroflash is synchronized at speeds slower than 1/60 sec; flash bulb is at speeds slower than 1/15 sec.
Hot shoe : Direct contact, sync auto control contact

FILM WINDING, REWINDING

Film winding : By lever. Winding at an angle of 130° (preliminary angle: 30°)
: Auto winding by Motor Drive 1 or Auto Winder
: With Safe Load Signal
Film counter : Auto resetting calculation. With Safe Load Signal
Film rewinding : By rewind button and crank system; auto reset of rewind button.

BACK COVER

Opening/Closing by pulling up knob, snapping back the cover.
With grip, memo holder (ISO, DIN, ASA table)

POWER

Two 1.5 V alkaline-manganese (LR44: Eveready A-76 or equiv.) or two 1.55 V silver-oxide (SR44: Eveready G-13 or equiv.)

OTHERS

Battery holder and Eyepiece cap

SIZE AND WEIGHT

51.5 × 90 × 137 mm (2 × 3-9/19 × 5-3/8 in.)
470 g (16-9/16 oz.) without power cells

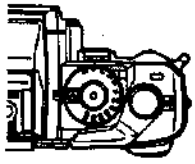
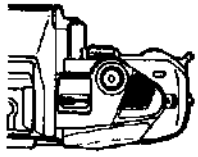
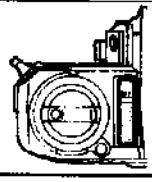
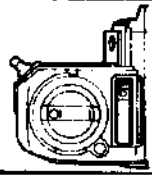
ACCESSORIES

Flash : Auto Electroflash 320X, 200X, 132X, 118X
Winder : Motor Drive 1, Auto Winder G
Remote control : Wireless Controller IR-1 set
Remoto Cord S/L
Others : Interchangeable Minolta lenses and applicable Minolta SLR system accessories.

Comparision table between 2024 and 2025

Ⅰ. Appearance

(only differences are described)

Item	2024	2025	Note
• Top cover • Mode/shutter speed selector • Film-advance lever			• For 2025, only silver model is available. • Discontinuity of Auto lock mech. of mode/shutter speed selector.
Back grip	Yes	No	
Bottom cover	Same shape		Marking: JAPAN or MARAYSIA
Bayonet lens mount	SUS	BS (Cr. plating)	
Main switch			• ON-OFF changeover • No audible piezoelectric warning mark

Ⅱ. Function

Item	2024	2025	Note
Direct autoflash metering	Yes	No	• Discontinuity of direct autoflash metering contact. • Flash fires manually with PX series (360PX can be used as sensor auto). • No flash-distance checker in viewfinder. • Discontinuity of slow-shutter sync function.
Sync terminal	Yes	No	• No electric shock prevention.
Preview button	Yes	No	
Audible piezoelectric warning	Yes	No	• No slow-shutter-speed warning. • No self-timer audible beeps.
F-number indication in viewfinder	Yes	No	
Connection with Multi-Function Back	Yes	No	• Back cover: fixed type (not detachable) • Discontinuity of contact terminals.

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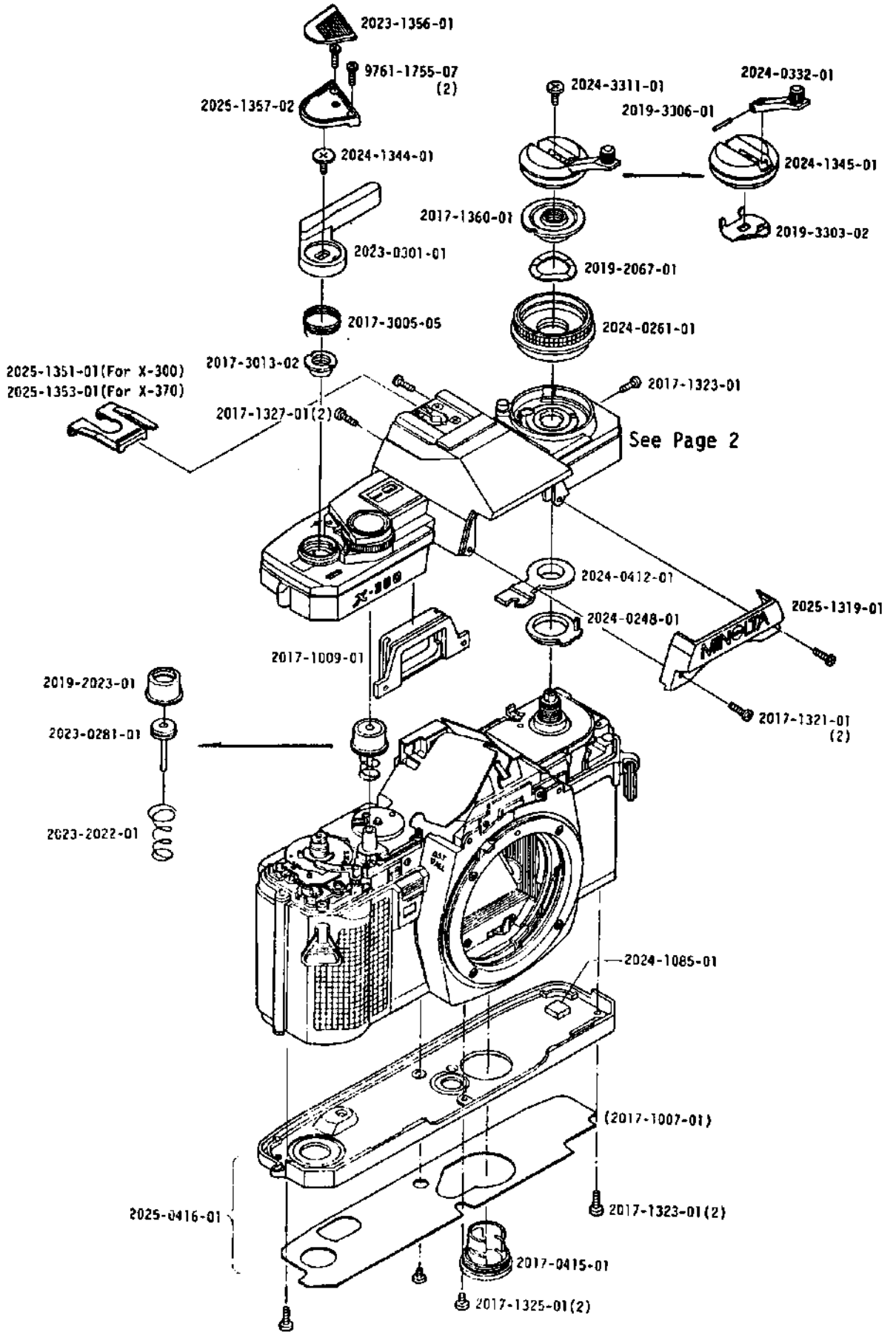

Part No.	Part Name		Qty
2024-0248-01	ASA contact holder set	ASAブラシホルダーセット	1
2024-0261-01	ASA operation knob set	ASA操作ノブセット	1
2023-0281-01	Shutter release button axis set	シャッター釦軸セット	
2023-0301-01	Film advance lever set	巻上レバーセット	1
2024-0332-01	Rewinding handle set	巻戻しハンドルセット	1
2024-0412-01	Main switch guide plate set	メインSWガイド板セット	1
2017-0415-01	Battery holder set	電池ケース蓋セット	1
2025-0416-01	Bottom cover set	下カバーセット	1
(2017-1007-01)	Bottom cover sheet	下カバー保護シート	1
2017-1009-01	Eye-piece frame	接眼枠	1
2024-1085-01	Sponge	コンデンサーガタ止め	1
2025-1319-01	Front top cover	上部正面カバー	1
2017-1321-01	Screw	止めねじ	2
2017-1323-01	Screw	止めねじ	3
2017-1325-01	Screw	止めねじ	2
2017-1327-01	Screw	止めねじ	2
2024-1344-01	Winding lever pressure	巻上レバー押えビス	1
2024-1345-01	Rewinding knob	巻戻しノブ	1
2025-1351-01	Accessory shoe spring (for X-300)	アクセサリーシューバネ	1
2025-1353-01	Accessory shoe spring (for X-370)	アクセサリーシューバネ	1
2023-1356-01	Finger rest leather	フインガーレスト貼皮	1
2025-1357-02	Finger rest	フインガーレスト	1
2017-1360-01	ASA dial nut	ASA押えナット	1
2023-2022-01	Shutter release button spring	シャッター釦SP	1
2019-2023-01	Shutter release button cap	シャッター釦キャップ	1
2019-2067-01	Pressure spring	ASA操作リング押えばね	1
2017-3005-05	Film advance lever spring	巻上レバー戻しSP	1
2017-3013-02	Top cover nut	上カバー止めナット	1
2019-3303-02	Rewinding handle spring	巻戻しハンドルばね	1
2019-3306-01	Rewinding handle axis	巻戻しハンドル軸	1
2024-3311-01	Rewinding handle screw	巻戻しノブビス	1
9761-1755-07	Tap tite screw	十字穴付タップタイトねじ	2

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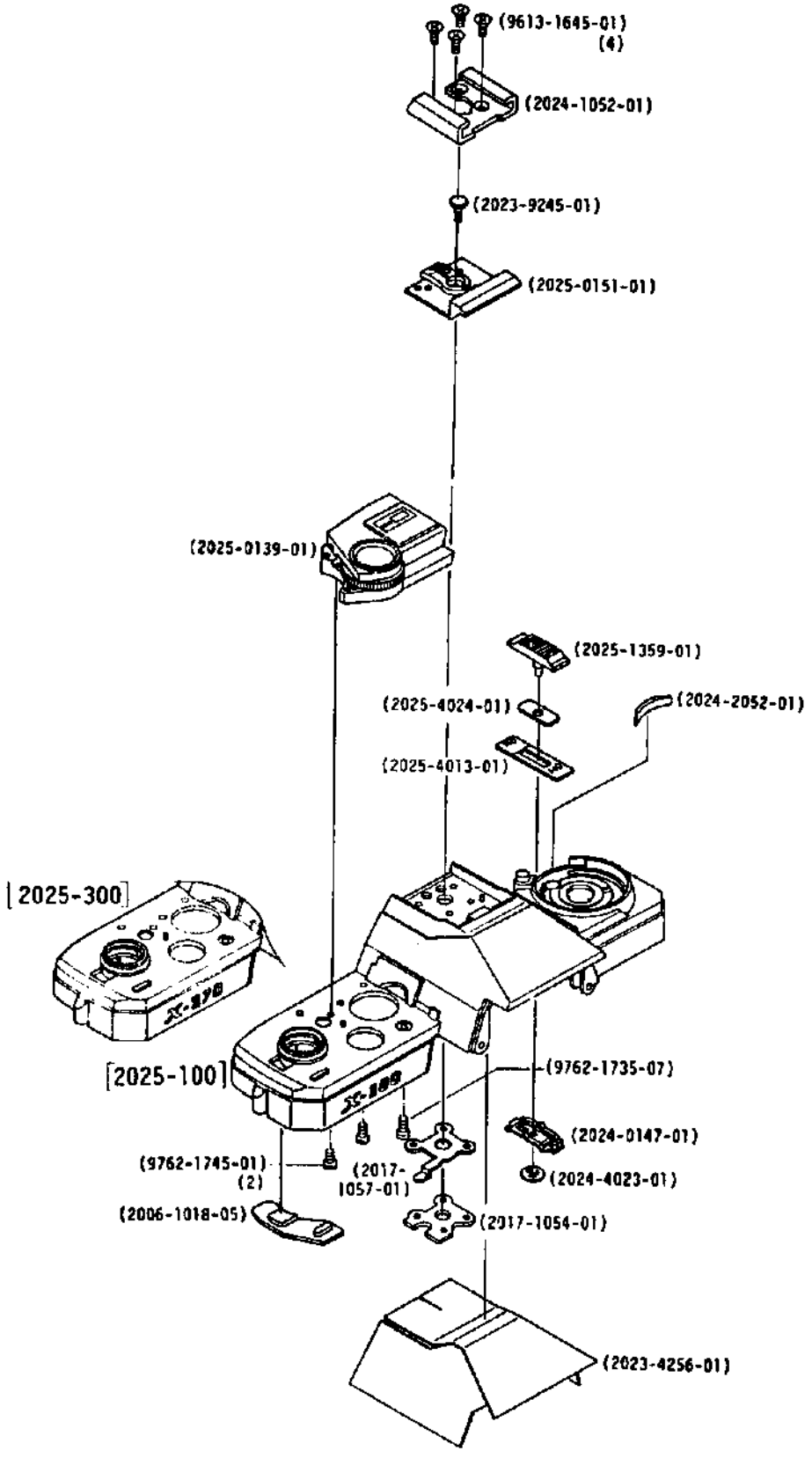
Assy Part No.2025-0195-01(For X-300)
Assy Part No.2025-0197-01(For X-370)



Part No.	Part Name		Qty
2025-0195-01	Top cover set (For X-300)	上カバーセット	1
2025-0197-01	Top cover set (For X-370)	上カバーセット	1
(2025-0139-01)	Shutter dial set	シャッターダイヤルセット	1
(2024-0147-01)	Click plate set	メインSWクリックバネセット	1
(2025-0151-01)	Accessory shoe base set	アクセサリーシュー座セット	1
(2006-1018-05)	Counter window	カウンター窓	1
(2024-1052-01)	Accessory shoe	アクセサリーシュー	1
(2017-1054-01)	Accessory shoe set plate	アクセサリーシュー取付板	1
(2017-1057-01)	Contact-C	コンタクト接片C	1
(2025-1359-01)	Main switch	メインSW切換レバー	1
(2024-2052-01)	ASA window	ASA窓	1
(2025-4013-01)	Main switch plate	メインSW銘板	1
(2024-4023-01)	Snaping ring	メインSW止め輪	1
(2025-4024-01)	Main switch sheet	メインSWレバーシート	1
(2023-4256-01)	Top cover isolation sheet	上カバー絶縁シート	1
(2023-9245-01)	Contact-A	コンタクト接点A	1
(9613-1645-01)	Phillips type screw	十字穴付半丸皿小ねじ	4
(9762-1735-07)	Tap tite screw	十字穴付なべタップタイトねじ	1
(9762-1745-01)	Tap tite screw	十字穴付なべタップタイトねじ	2

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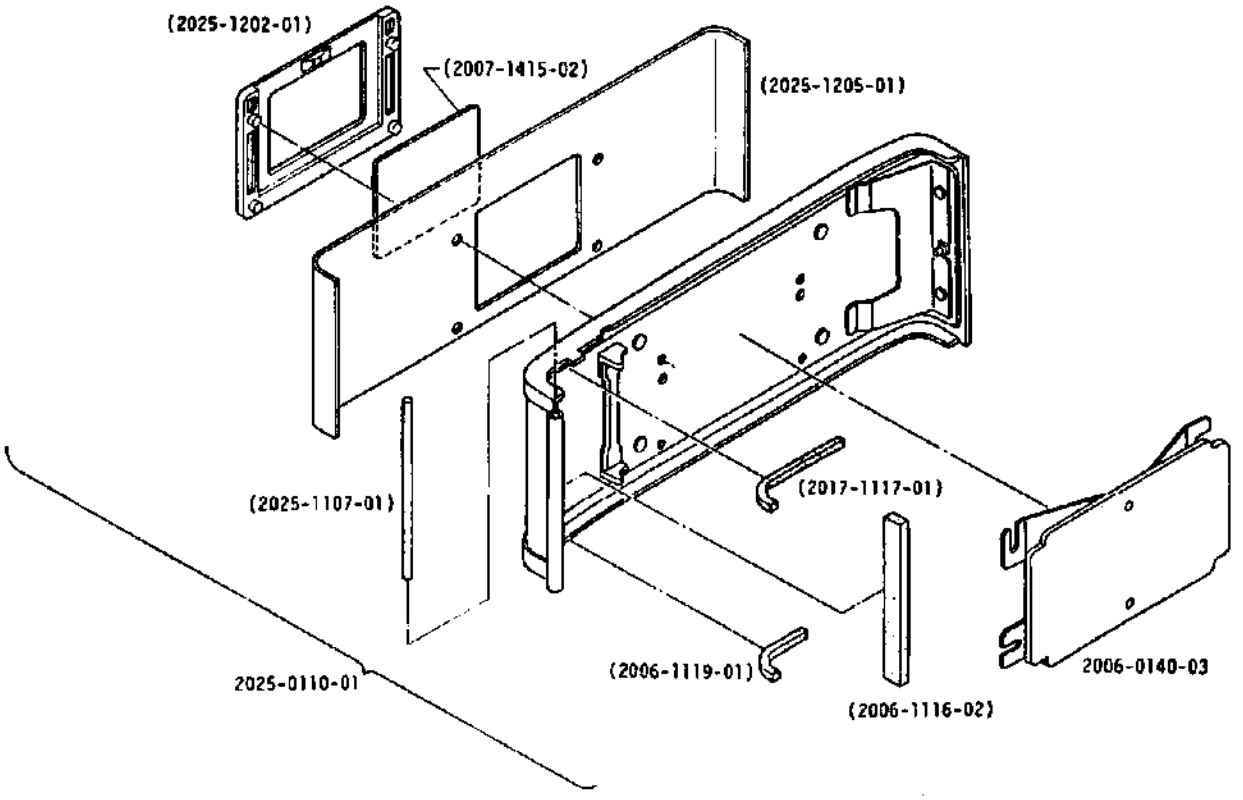

Part No.	Part Name		Qty
2025-0110-01	Back cover set	裏蓋セット	1
(2025-1107-01)	Hinge axis	ヒンジ軸	1
(2006-1116-02)	Back cover light shield plate	裏蓋遮光片	1
(2017-1117-01)	Back cover light shield plate-C	裏蓋遮光片	1
(2006-1119-01)	Back cover light shield plate-B	裏蓋遮光片	1
(2025-1202-01)	Memo holder	裏蓋ポケット	1
(2025-1205-01)	Back cover leather	裏蓋貼皮	1
(2007-1415-02)	Conversion scale	ASA / ISO換算板	1
2006-0140-03	Pressure plate set	圧着板セット	1

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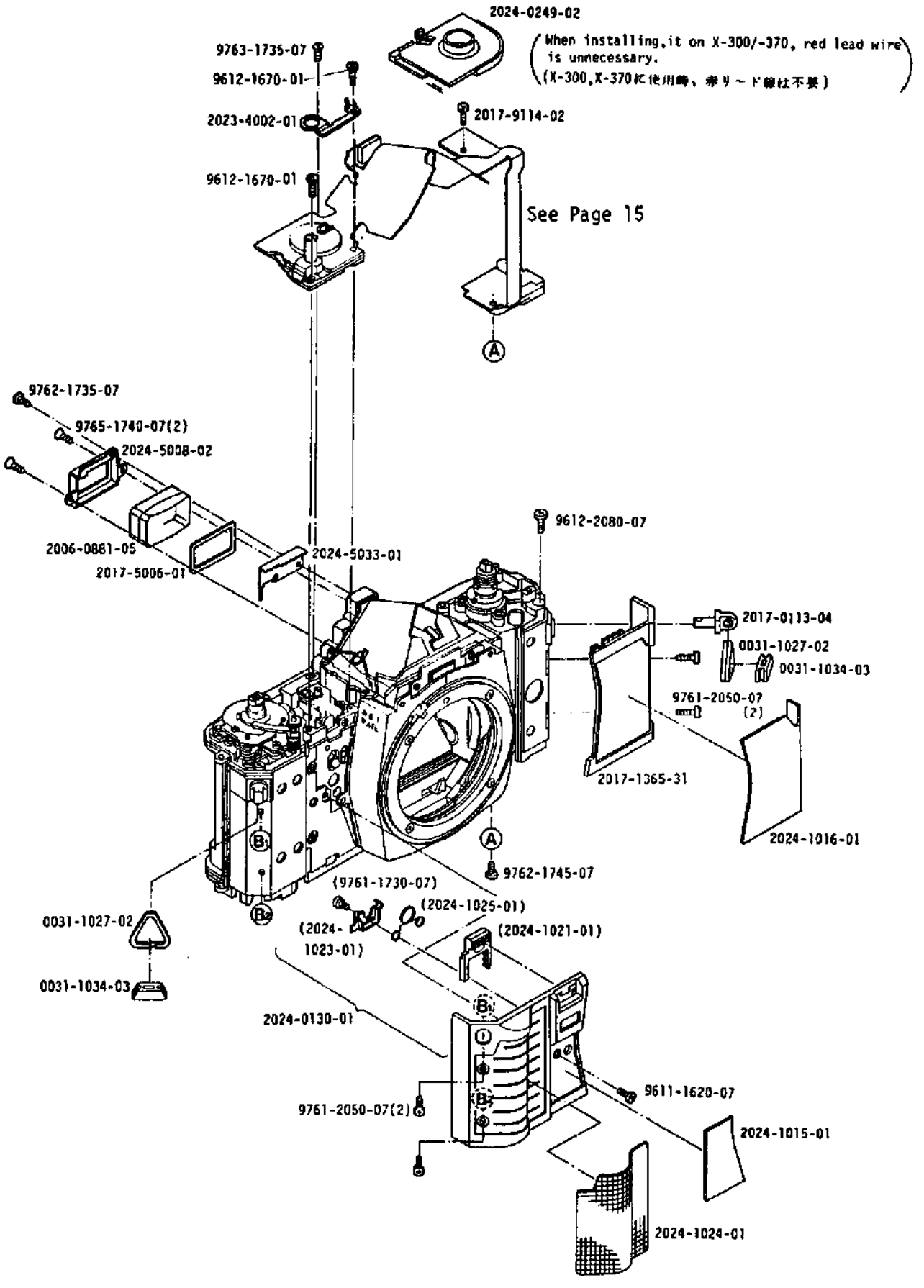

Part No.	Part Name		Qty
2017-0113-04	Strap hanger set	吊環セット	1
2024-0130-01	Side cover-A set	サイドカバーAセット	1
(2024-1021-01)	Self-timer lever	セルフレバー	1
(2024-1023-01)	Click spring	セルフクリックバネ	1
(2024-1025-01)	Self-timer lever spring	セルフレバーSP	1
(9761-1730-07)	Tap tite screw	十字穴付なべタップタイトねじ	1
2024-0249-02	ASA resistor set	ASA抵抗体セット	1
2006-0881-05	Eye-piece lens set	接眼レンズセット	1
2024-1015-01	Right side leather	右貼皮	1
2024-1016-01	Left side leather	左貼皮	1
2024-1024-01	Grip leather	グリップ貼皮	1
0031-1027-02	Triangle hanger	三角吊環	2
0031-1034-03	Triangle hanger stopper	三角環回り止め	2
2017-1365-31	Side cover-B	サイドカバー	1
2023-4002-01	Earth plate	タッチSWアース板	1
2017-5006-01	Eye-piece light shield plate	接眼レンズ遮光枠	1
2024-5008-02	Eye-piece pressure	接眼レンズ押え	1
2024-5033-01	Shield plate	シールド板	1
2017-9114-02	Screw	止めねじ	1
9611-1620-07	Phillips type screw	十字穴付なべ小ねじ	1
9612-1670-01	Phillips type screw	十字穴付なべ小ねじ	2
9612-2080-07	Phillips type screw	十字穴付なべ小ねじ	1
9761-2050-07	Tap tite screw	十字穴付なべタップタイトねじ	4
9762-1735-07	Tap tite screw	十字穴付なべタップタイトねじ	1
9762-1745-07	Tap tite screw	十字穴付なべタップタイトねじ	1
9763-1735-07	Tap tite screw	十字穴付半丸皿タップタイトねじ	1
9765-1740-07	Tap tite screw	十字穴付皿タップタイトねじ	2

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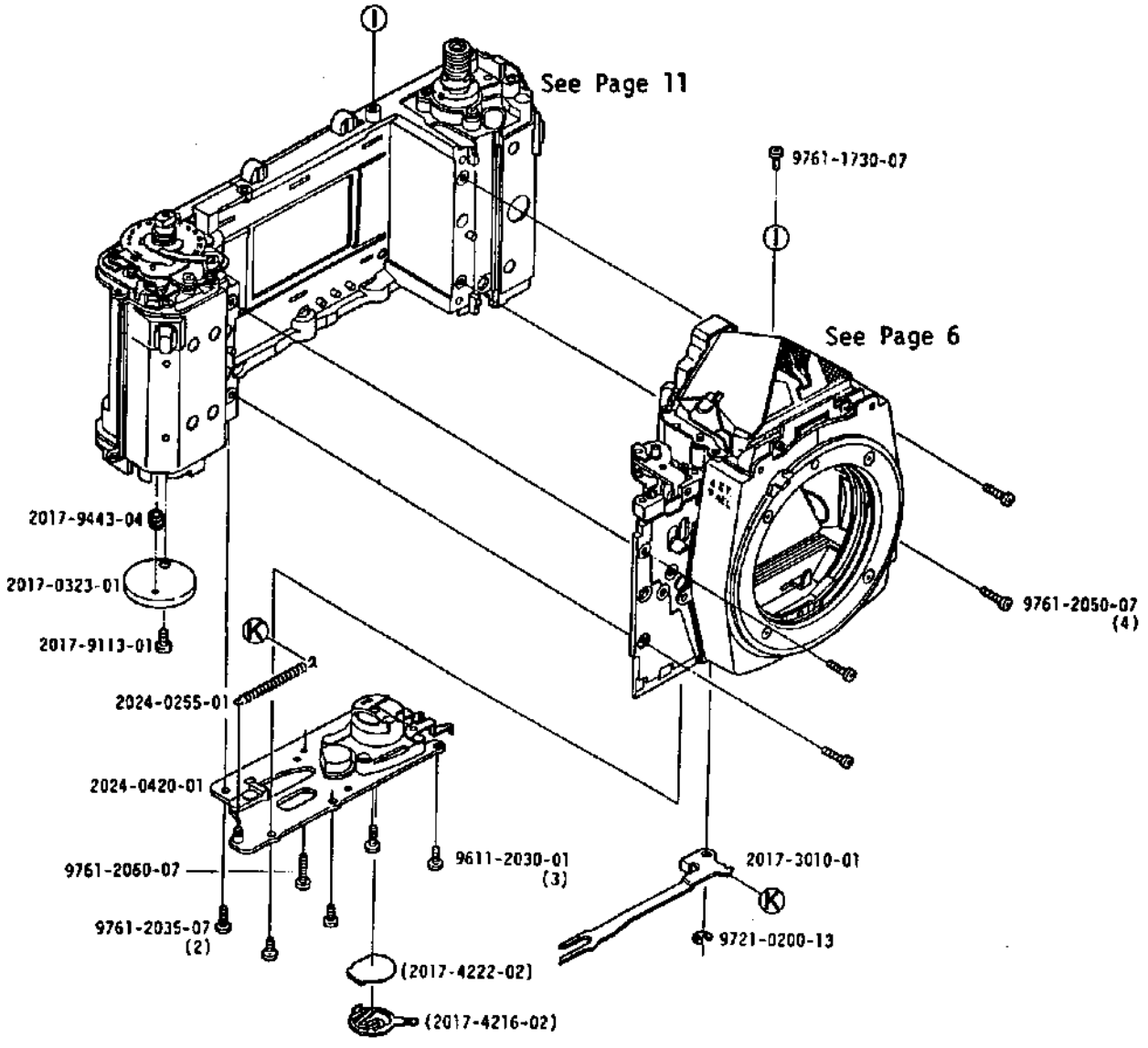

Part No.	Part Name		Qty
2024-0255-01	MP return sub spring-B set	MP戻し補助SP－Bセット	1
2017-0323-01	Winder coupler set	ワインダーカプラーセット	1
2024-0420-01	Battery case base plate set	電池ケース台板セット	1
(2017-4216-02)	Battery contact (+)	電池接片（＋）	1
(2017-4222-02)	Battery light shield plate	電池ケース遮光板	1
2017-3010-01	Charge lever	チャージレバー	1
2017-9113-01	Screw	止めねじ	1
2017-9443-04	Charge lever roller	チャージレバーローラー	1
9611-2030-01	Phillips type screw	十字穴付なべ小ねじ	3
9721-0200-13	E ring	E リング	1
9761-1730-07	Tap tite screw	十字穴付なべタップタイトねじ	1
9761-2035-07	Tap tite screw	十字穴付なべタップタイトねじ	2
9761-2050-07	Tap tite screw	十字穴付なべタップタイトねじ	4
9761-2060-07	Tap tite screw	十字穴付なべタップタイトねじ	1

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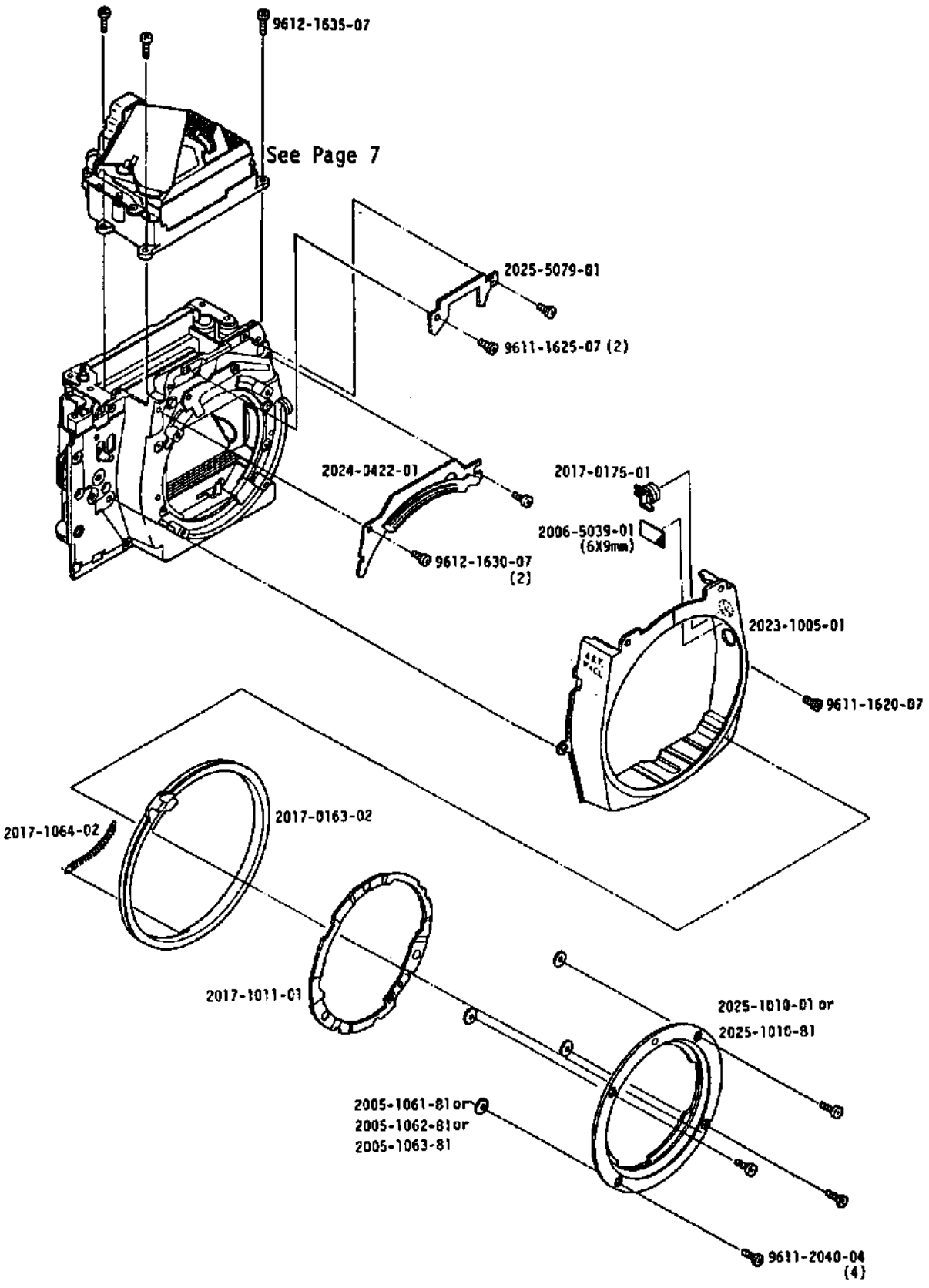
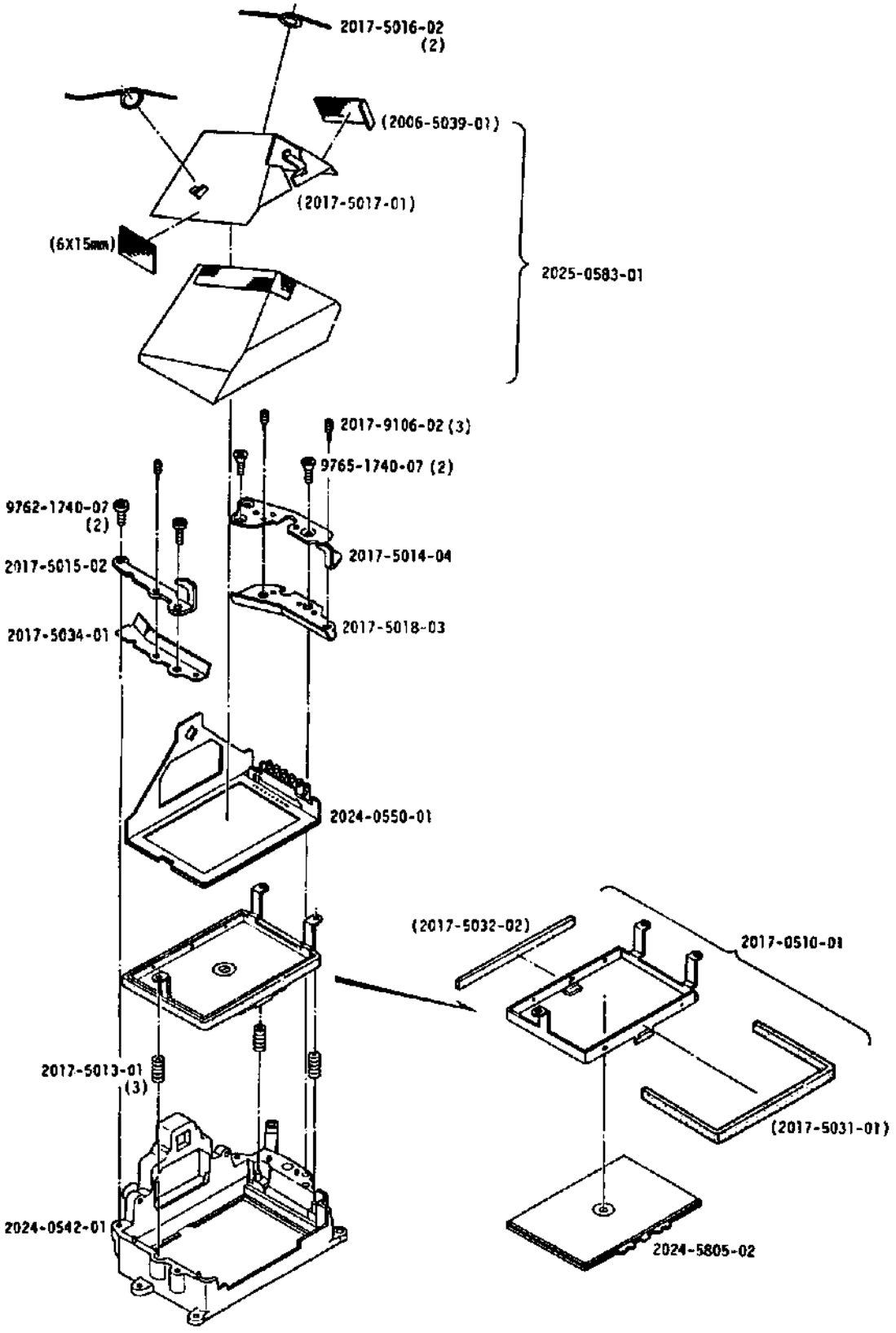


Part No.	Part Name		Qty
2017-0163-02	Aperture coupling ring set	連結リングセット	1
2017-0175-01	Lens lock button set	レンズロック釦セット	1
2024-0422-01	AV resistor plate set	AV基板セット	1
2023-1005-01	Front cover	前カバー	1
2025-1010-01	Bayonet lens mount	バヨネット座板	1
2025-1010-81	Bayonet lens mount (-0.1mm)	バヨネット座板	
2017-1011-01	Bayonet spring	バヨネットSP	1
2005-1061-81	Adjustment washer-A (0.02mm)	調整ワッシャー A	Some
2005-1062-81	Adjustment washer-B (0.05mm)	調整ワッシャー B	
2005-1063-81	Adjustment washer-C (0.1mm)	調整ワッシャー C	
2017-1064-02	Aperture coupling ring spring	連結リングSP	1
2006-5039-01	Penta. pressure tape (Per roll)	ペンタ押え板テープ	1
2025-5079-01	Front cover plate	前カバー当り板	1
9611-1620-07	Phillips type screw	十字穴付なべ小ねじ	1
9611-1625-07	Phillips type screw	十字穴付なべ小ねじ	2
9611-2040-04	Phillips type screw	十字穴付なべ小ねじ	4
9612-1630-07	Phillips type screw	十字穴付なべ小ねじ	2
9612-1635-07	Phillips type screw	十字穴付なべ小ねじ	3

X-300 Code No.2025-100
X-370 Code No.2025-300



Part No.	Part Name		Qty
2017-0510-01	Fresnel lens holder set	焦点板ホルダーセット	1
(2017-5031-01)	Packing A	防塵モルトプレンA	1
(2017-5032-02)	Packing B	防塵モルトプレンB	1
2024-0542-01	Penta. holder set	ペンタホルダーセット	1
2024-0550-01	Penta. receiver set	ペンタ受けセット	1
2025-0583-01	Penta. prism set	ペンタプリズムセット	1
(2017-5017-01)	Penta. pressure plate	ペンタ押え板	1
(2006-5039-01)	Penta. pressure tape (Per roll)	ペンタ押え板テープ	2
2017-5013-01	Fresnel lens holder spring	焦点板ホルダーSP	3
2017-5014-04	Penta. pressure (Left side)	ペンタ押え板（左）	1
2017-5015-02	Penta. pressure (Right side)	ペンタ押え板（右）	1
2017-5016-02	Penta. pressure spring	ペンタ押えSP	2
2017-5018-03	L.E.D. diffusion plate	LED拡散板	1
2017-5034-01	Dustproof sheet	防塵シート	1
2024-5805-02	Fresnel lens	焦点板	1
2017-9106-02	Screw	焦点板調整ねじ	3
9762-1740-07	Tap tite screw	十字穴付なべタップタイトねじ	2
9765-1740-07	Tap tite screw	十字穴付皿タップタイト ねじ	2

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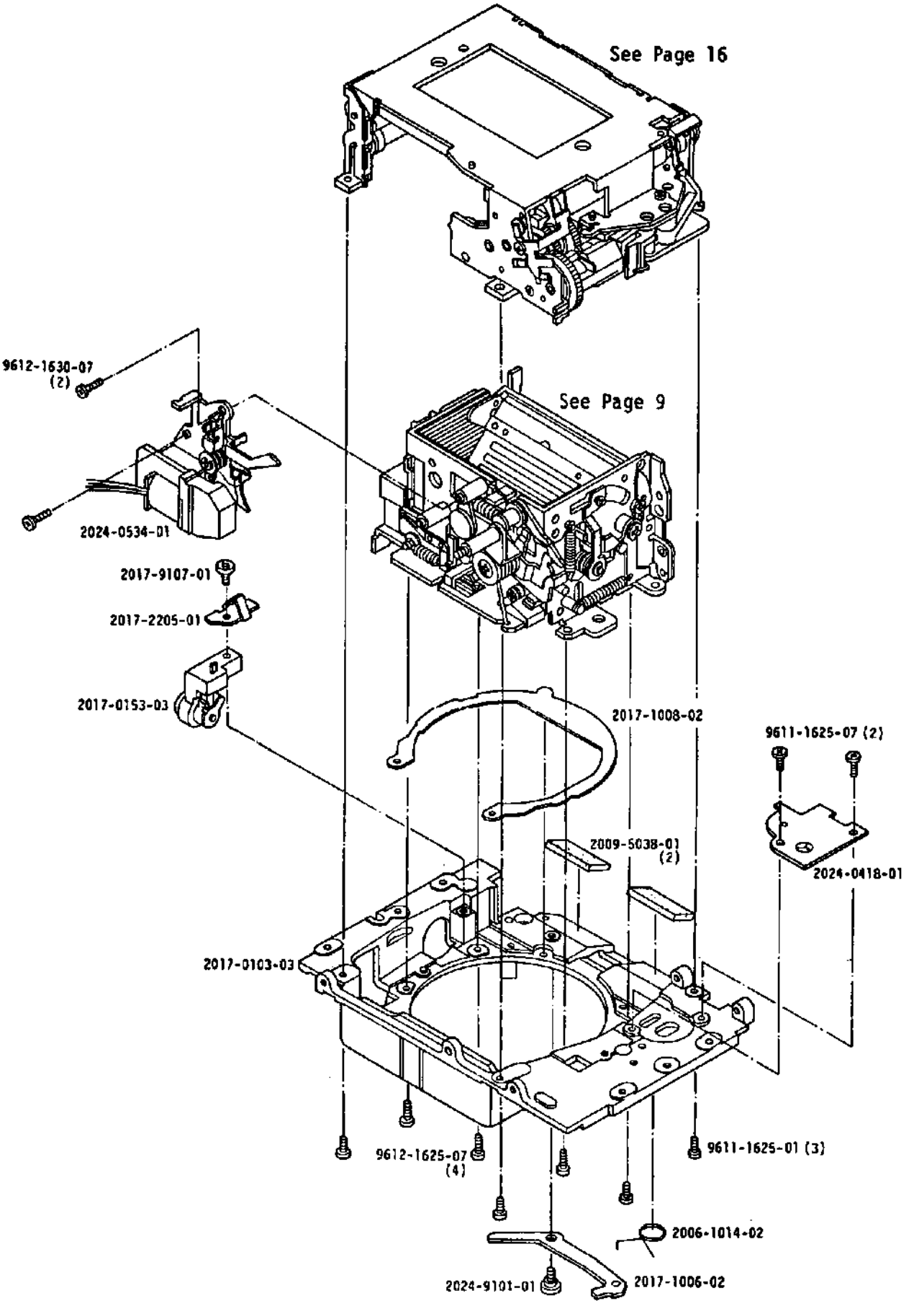

Part No.	Part Name		Qty
2017-0103-03	Front base plate set	前枠セット	1
2017-0153-03	Remote control terminal set	リモコン台板セット	1
2024-0418-01	Self-timer plate set	セルフSW基板セット	1
2024-0534-01	Magnetic release base plate set	絞りストップ台板セット	1
2017-1006-02	Lens lock lever	レンズロックレバー	1
2017-1008-02	Mirror box light shield plate	ミラーボックス遮光板	1
2006-1014-02	Lock lever spring	ロックレバーSP	1
2017-2205-01	Lead wire pressure	コード押え	1
2009-5038-01	Penta. front cushion	ペンタ前面押えクッション	2
2024-9101-01	Lens lock axis	レンズロック軸	1
2017-9107-01	Screw	止めねじ	1
9611-1625-01	Phillips type screw	十字穴付なべ小ねじ	3
9611-1625-07	Phillips type screw	十字穴付なべ小ねじ	2
9612-1625-07	Phillips type screw	十字穴付なべ小ねじ	4
9612-1630-07	Phillips type screw	十字穴付なべ小ねじ	2

X-300 Code No.2025-100
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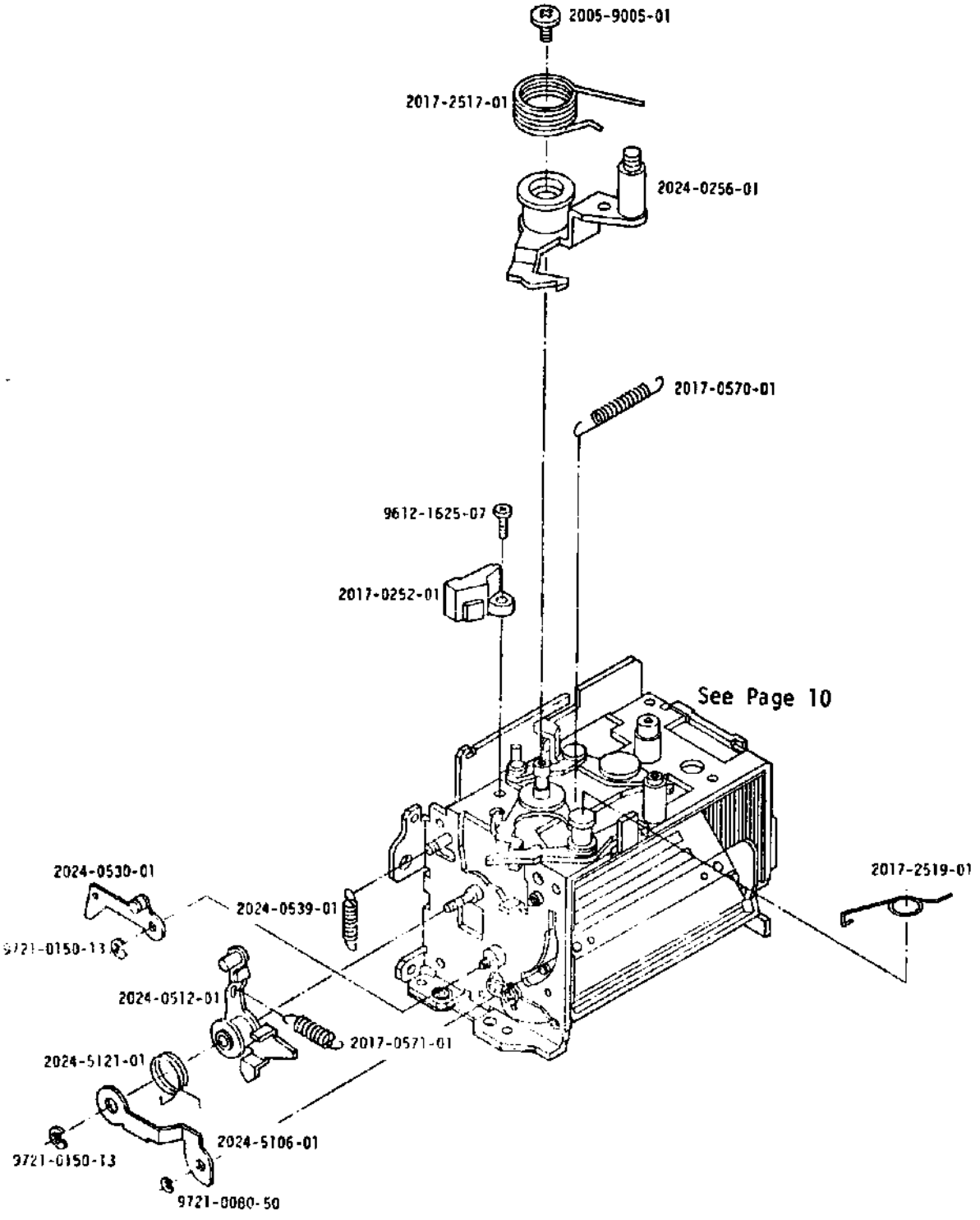
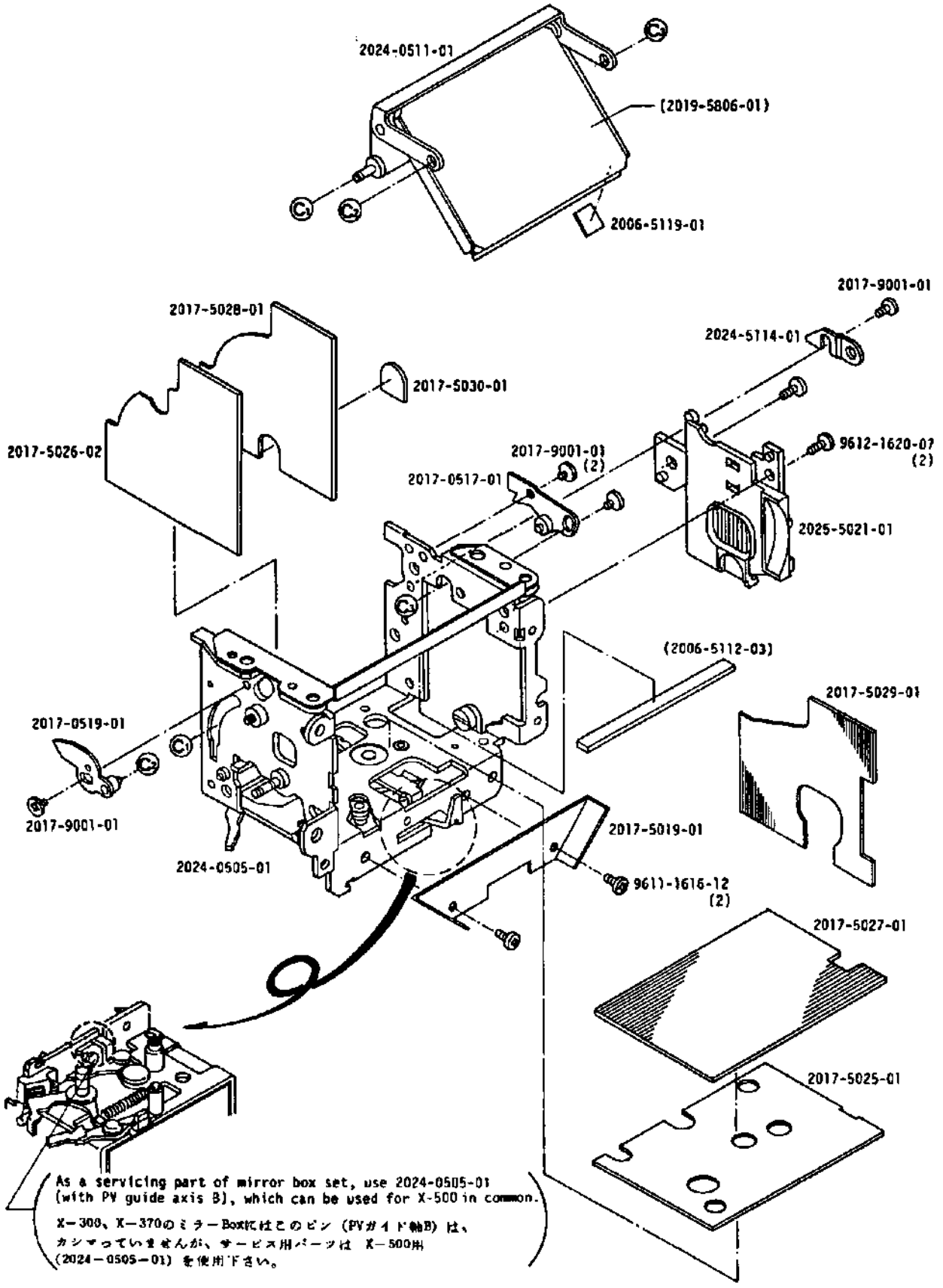


Part No.	Part Name		Qty
2017-0252-01	MP return stopper set	MP戻しストッパーセット	1
2024-0256-01	MP return lever set	MP戻しレバーセット	1
2024-0512-01	Mirror operation lever set	ミラー駆動レバーセット	1
2024-0530-01	Mirror delay lever set	ミラー遅延レバーセット	1
2024-0539-01	Mirror delay spring set	ミラー遅延SPセット	1
2017-0570-01	MP loop spring set	MPループSPセット	1
2017-0571-01	Mirror operation lever spring set	ミラー駆動SPセット	1
2017-2517-01	MP return spring	MP戻しSP	1
2017-2519-01	MP return stop lever spring	MP戻し係止レバーSP	1
2024-5106-01	Mirror operation lever-B	ミラー操作レバーB	1
2024-5121-01	Mirror operation lever-B spring	ミラー押えSP	1
2005-9005-01	Screw	MP戻しレバー押えねじ	1
9612-1625-07	Phillips type screw	十字穴付なべ小ねじ	1
9721-0080-50	E ring	E リング	1
9721-0150-13	E ring	E リング	2

X－300　Code No.2025-100
X－370　Code No.2025-300



Part No.	Part Name		Qty
2024-0505-01	Mirror box set	ミラーボックスセット	1
(2006-5112-03)	Mirror cushion	ミラークッション	1
2024-0511-01	Mirror holder set	ミラーホルダーセット	1
(2019-5806-01)	Mirror	ミラー	1
2017-0517-01	Mirror adjustment plate-B set	ミラー調整板Bセット	1
2017-0519-01	Mirror adjustment plate-A set	ミラー調整板Aセット	1
2017-5019-01	Mirror box apron	ミラーボックスエプロン	1
2025-5021-01	Mirror box side plate	ミラーボックス側板	1
2017-5025-01	Flare shield bottom plate	フレアー防止シート下板	1
2017-5026-02	Flare shield right plate	フレアー防止シート右板	1
2017-5027-01	Flare shield bottom plate-A	フレアー防止シート下	1
2017-5028-01	Flare shield right plate-A	フレアー防止シート右A	1
2017-5029-01	Flare shield left plate	フレアー防止シート左	1
2017-5030-01	Flare shield right plate-B	フレアー防止シート右B	1
2024-5114-01	Mirror support stopper	ミラー補助ストッパーB	1
2006-5119-01	Mirror stopper gum	ミラーストッパーゴム	1
2017-9001-01	Screw	調整板押ビス	4
9611-1616-12	Phillips type screw	十字穴付なべ小ねじ	2
9612-1620-07	Phillips type screw	十字穴付なべ小ねじ	2

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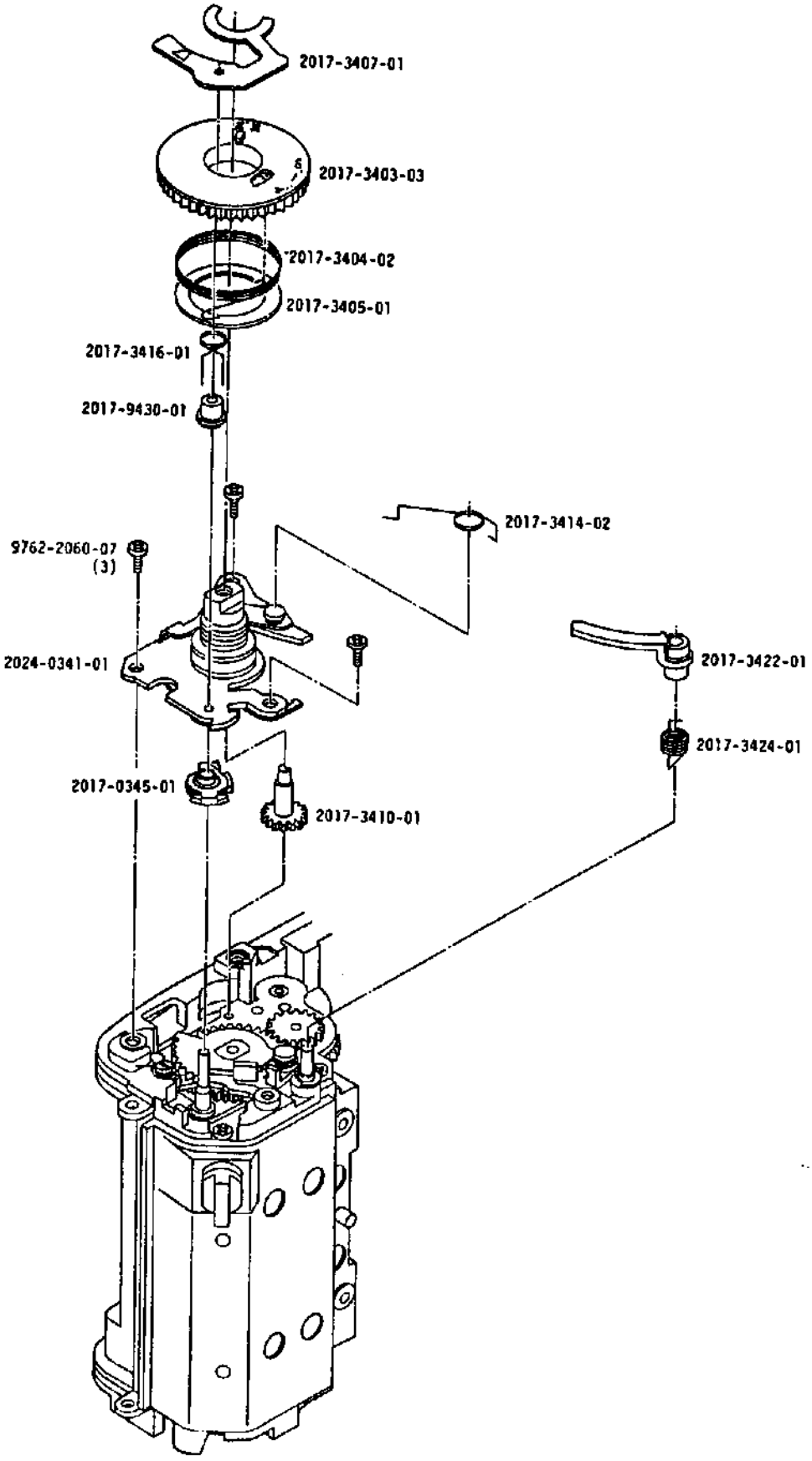

Part No.	Part Name		Qty
2024-0341-01	Winding base plate-B set	巻取台板Bセット	1
2017-0345-01	Winding operation lever set	トンボ返りレバーセット	1
2017-3403-03	Counter dial	カウンターラチエット	1
2017-3404-02	Counter return spring	カウンター戻しSP	1
2017-3405-01	Washer	カウンター補助ワッシャー	1
2017-3407-01	Counter index	カウンター指標板	1
2017-3410-01	Counter operation gear	フイルムカウンターギヤー	1
2017-3414-02	Return spring	カウンターレバー操作SP	1
2017-3416-01	Winding operation lever spring	トンボ返りレバーSP	1
2017-3422-01	Safe loading signal lever	フイルム表示レバー	1
2017-3424-01	S.L.S. lever spring	SLS駆動SP	1
2017-9430-01	Collar	カウンター指標カラー	1
9762-2060-07	Tap tite screw	十字穴付なべタップタイトねじ	3

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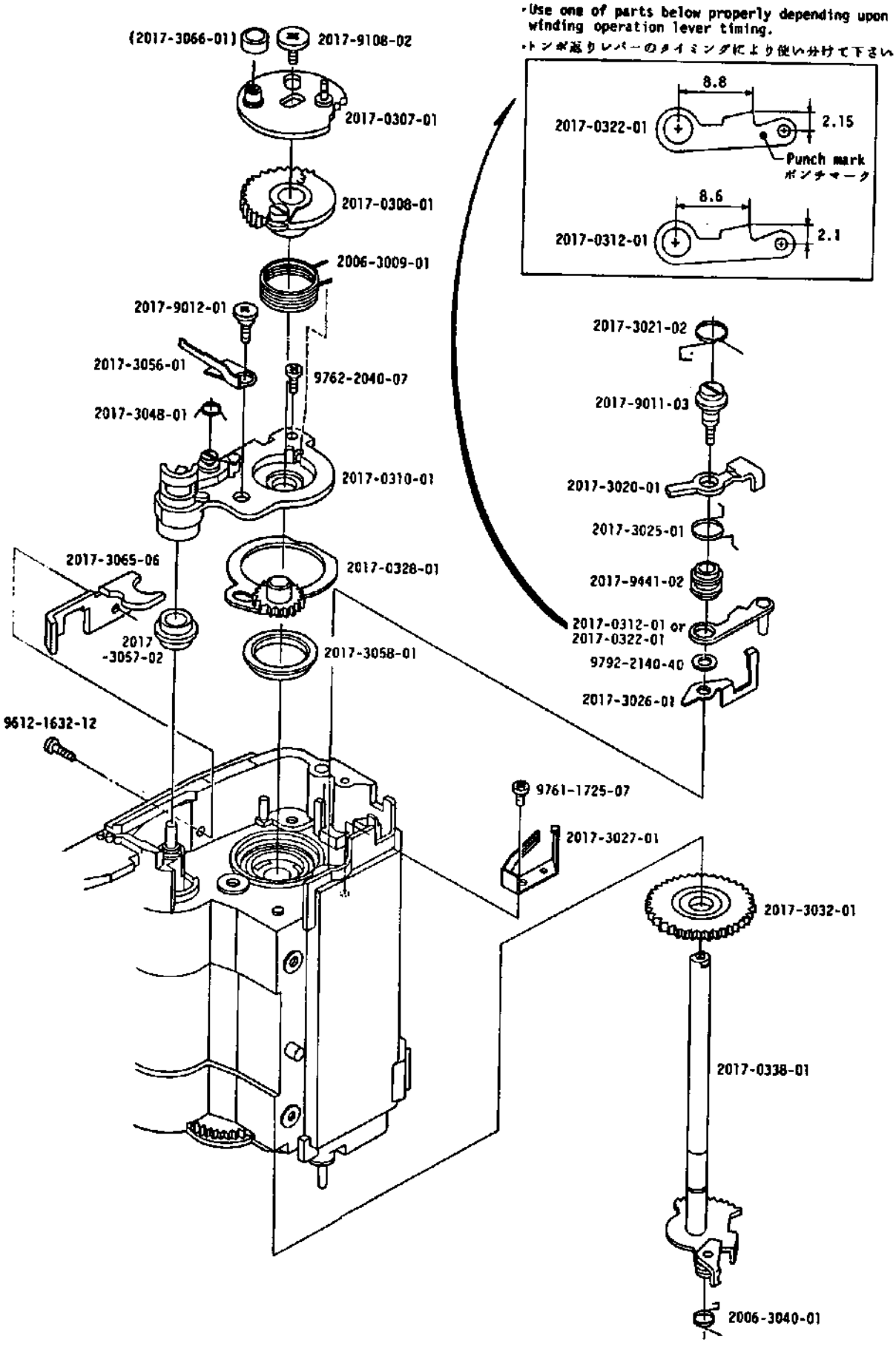

Part No.	Part Name		Qty
2017-0307-01	Charge operation plate set	チャージ操作板セット	1
(2017-3066-01)	Stopper	巻止ストッパーゴム	1
2017-0308-01	Shutter charge gear-D set	シャッターチャージギヤーDセット	1
2017-0310-01	Winding shaft receiver set	巻取下軸受セット	1
2017-0312-01	Winding stop lever-A set	巻止めレバーAセット	} 1
2017-0322-01	Winding stop lever-A set	巻止めレバーAセット	
2017-0328-01	Gear-C base plate set	ギヤーC台板セット	1
2017-0338-01	Winding shaft set	巻取操作板セット	1
2006-3009-01	Return spring	戻しSP	1
2017-3020-01	Reset lever	リセットレバー	1
2017-3021-02	Reset lever spring	リセットレバーSP	1
2017-3025-01	Reset lever surpport spring	リセットレバー補助SP	1
2017-3026-01	Contact-A (S4)	S4接片A	1
2017-3027-01	Contact-B (S4)	S4接片B	1
2017-3032-01	Winding gear	巻取ギヤー	1
2006-3040-01	Winding claw spring	巻取爪SP	1
2017-3048-01	Over-run stop lever spring	オーバーラン防止レバーSP	1
2017-3056-01	R button lock spring	R釦ロックばね	1
2017-3057-02	Sprocket receiver	スプロケット軸受	1
2017-3058-01	Collar	巻取下軸受補助カラー	1
2017-3065-06	Stopper	チャージ操作板ストッパー	1
2017-9011-03	Screw	巻止めレバー軸	1
2017-9012-01	Screw	巻止め軸受止めねじ	1
2017-9108-02	Screw	チャージ板押えビス	1
2017-9441-02	Collar	巻止めレバーカラー	1
9612-1632-12	Phillips type screw	十字穴付なべ小ねじ	1
9761-1725-07	Tap tite screw	十字穴付なべタップタイトねじ	1
9762-2040-07	Tap tite screw	十字穴付なべタップタイトねじ	1
9792-2140-40	Washer	薄ワッシャー	1

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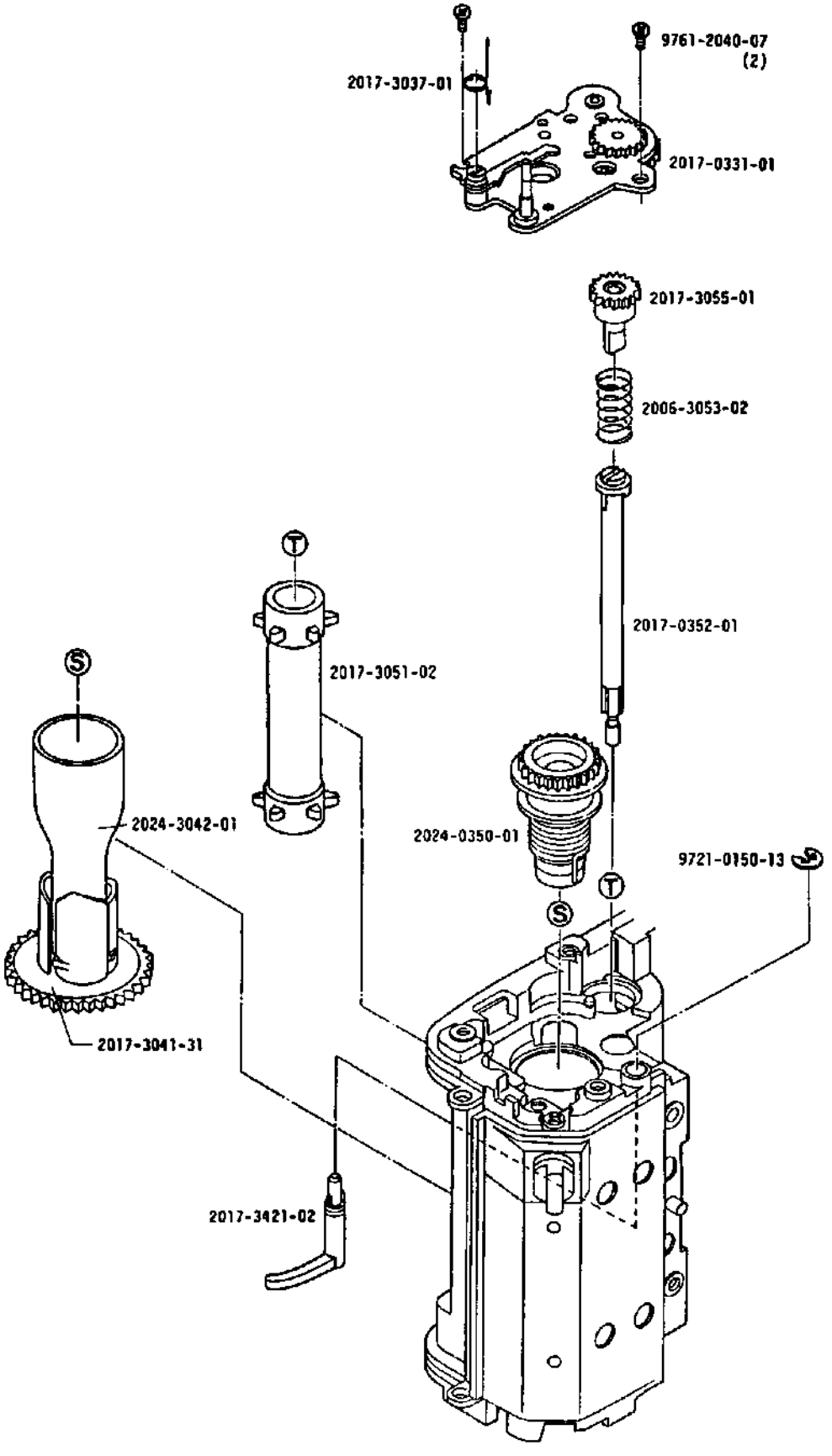
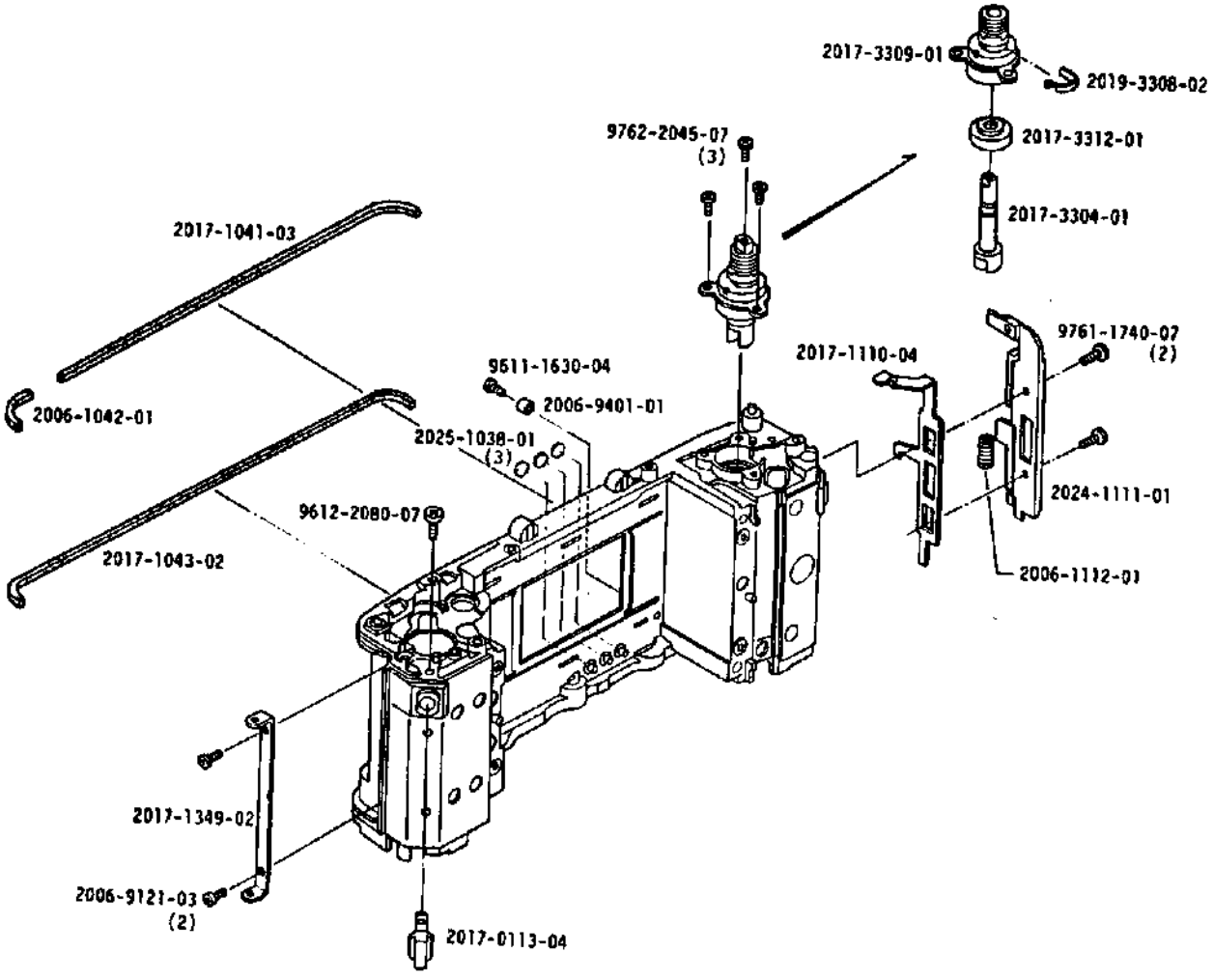


Part No.	Part Name		Qty
2017-0331-01	Winding base plate-A set	巻取台板Aセット	1
2024-0350-01	Spool friction gear set	スプールフリクション ギヤーセット	1
2017-0352-01	Sprocket shaft set	スプロケット軸セット	1
2017-3037-01	Reversion stop lever spring	逆転止めレバーSP	1
2017-3041-31	Spool	スプール	1
2024-3042-01	Spool inner barrel	スプール内筒	1
2017-3051-02	Sprocket	スプロケット	1
2006-3053-02	R button release spring	R釦解除SP	1
2017-3055-01	Sprocket gear	スプロケットギヤー	1
2017-3421-02	Film indication filler	フイルム表示フイラー	1
9721-0150-13	E ring	E リング	1
9761-2040-07	Tap tite screw	十字穴付なべタップタイトねじ	2

X-300 Code No.2025-100
X-370 Code No.2025-300



Part No.	Part Name		Qty
2017-0113-04	Strap hanger set	吊環セット	1
2025-1038-01	Mask sheet	信号ピンマスクシート	3
2017-1041-03	Light shield packing-A	遮光パッキンA	1
2006-1042-01	Light shield packing-B	遮光パッキンB	1
2017-1043-02	Light shield packing-C	遮光パッキンC	1
2017-1110-04	Back cover lock lever	裏蓋ロックレバー	1
2024-1111-01	Lock cover	ロックカバー	1
2006-1112-01	Back cover lock spring	裏蓋ロックSP	1
2017-1349-02	Hinge	ヒンジ	1
2017-3304-01	Rewinding fork	巻戻しフォーク	1
2019-3308-02	Rewinding friction spring	巻戻しフリクションSP	1
2017-3309-01	Rewinding axis receiver	巻戻し軸受	1
2017-3312-01	Light shield collar	巻戻し遮光カラー	1
2006-9121-03	Tapping screw	止めねじ	2
2006-9401-01	Film guide collar	フイルムガイドカラー	1
9611-1630-04	Phillips type screw	十字穴付なべ小ねじ	1
9612-2080-07	Phillips type screw	十字穴付なべ小ねじ	1
9761-1740-07	Tap tite screw	十字穴付なべタップタイトねじ	2
9762-2045-07	Tap tite screw	十字穴付なべタップタイトねじ	3

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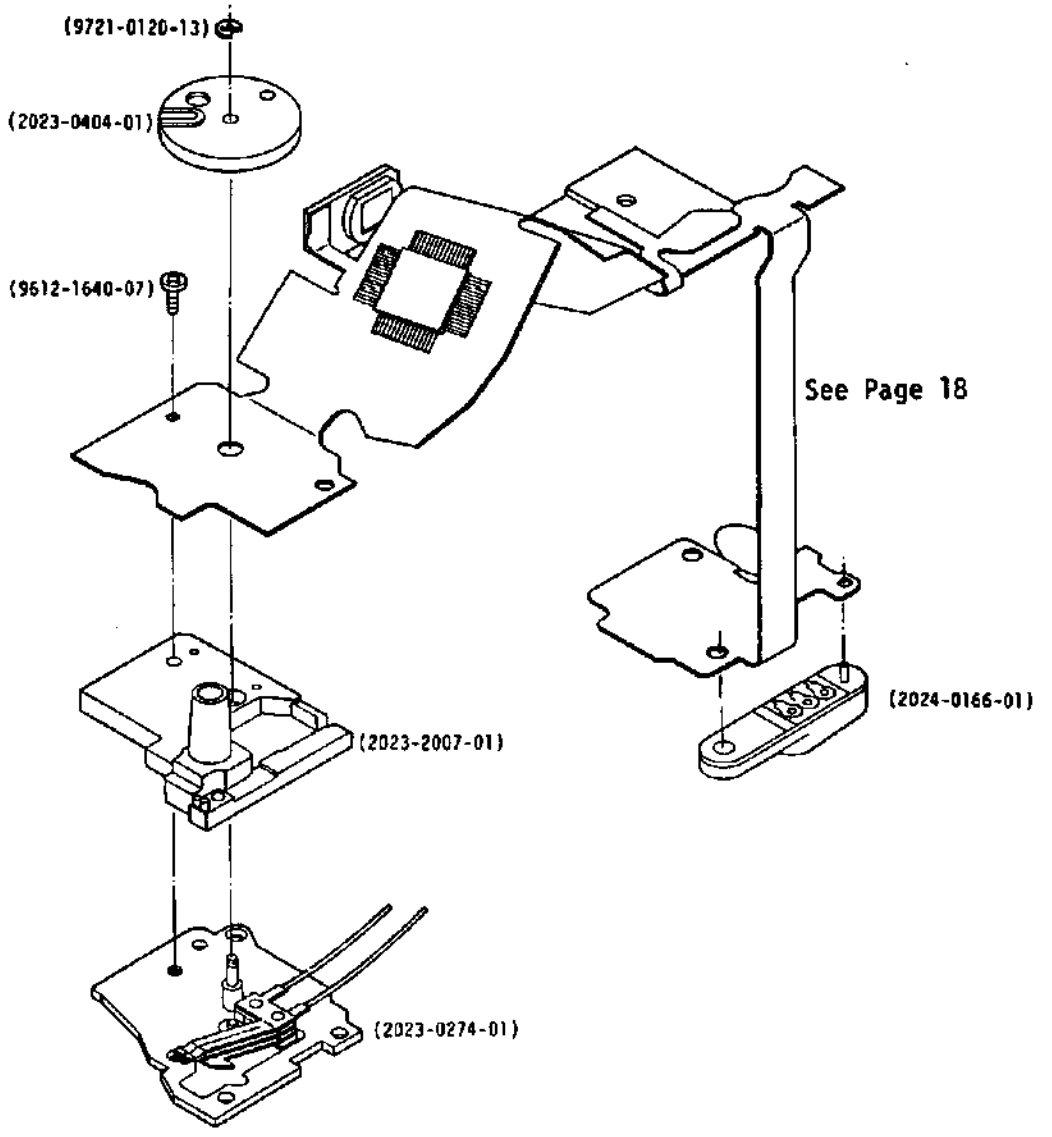
Assy. Part No.2025-0401-01



Part No.	Part Name		Qty
2025-0401-01	Flexible PC board	フレキシブル基板セット	1
(2024-0166-01)	Motor drive connect holder set	モードラ接点ホルダーセット	1
(2023-0274-01)	Shutter dial plate set	シャッターダイヤル台板セット	1
(2023-0404-01)	TV contact set	TV接片ホルダーセット	1
(2023-2007-01)	Shutter dial holder	シャッターダイヤルホルダー	1
(9612-1640-07)	Phillips type screw	十字穴付なべ小ねじ	1
(9721-0120-13)	E ring	E リング	1

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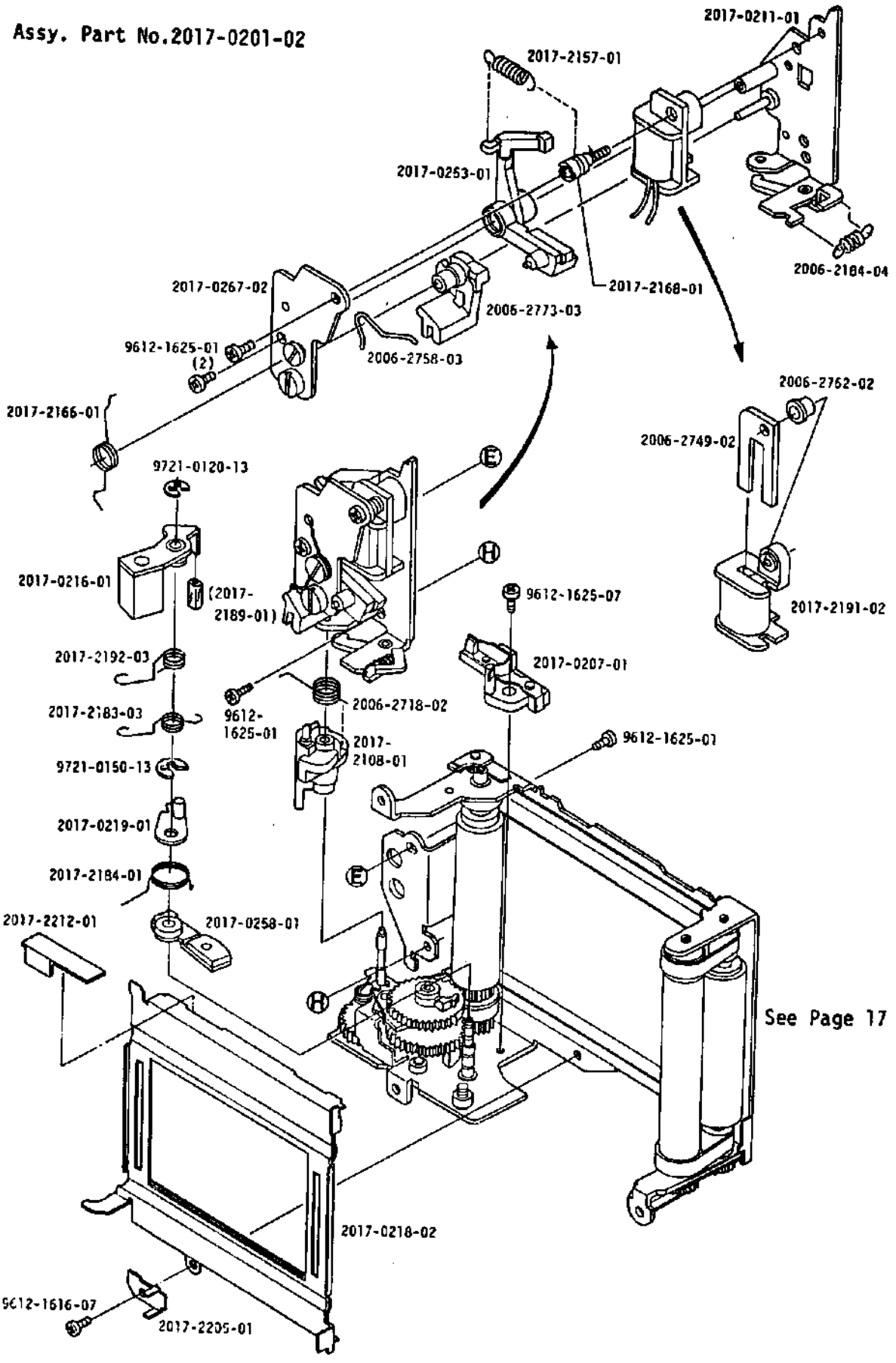
Assy. Part No.2017-0201-02



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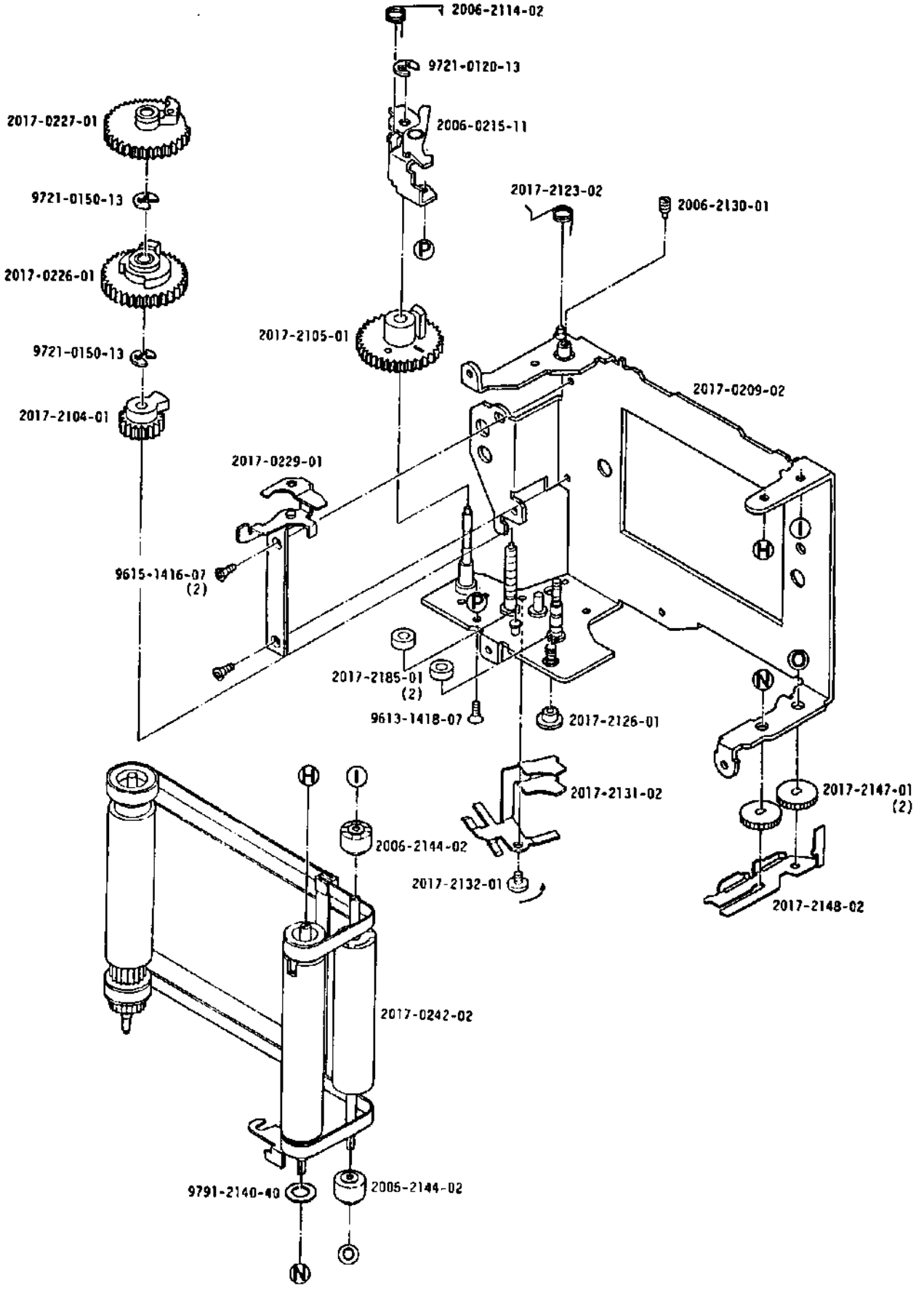
Part No.	Part Name		Qty
2017-0201-02	Shutter block	シャッターブロック	1
2017-0207-01	X contact plate set	X接片セット	1
2017-0211-01	Control base plate set	制御台板セット	1
2017-0216-01	2nd. curtain brake lever set	二幕ブレーキレバーセット	1
(2017-2189-01)	Isolation tube	X接片絶縁チューブ	1
2017-0218-02	Shutter cover plate set	シャッターカバー板セット	1
2017-0219-01	1st. curtain support lever set	一幕ブレーキ補助レバーセット	1
2017-0253-01	2nd. curtain release lever set	二幕解除レバーセット	1
2017-0258-01	1st. curtain brake lever set	一幕ブレーキレバーセット	1
2017-0267-02	Winding base plate set	Mag. 配線基板セット	1
2017-2108-01	Control cam	制御カム	1
2017-2157-01	2nd. curtain release lever spring	二幕解除レバーSP	1
2017-2166-01	Trigger contact	トリガー接片	1
2017-2168-01	Screw	トリガー基板取付ねじ	1
2017-2183-03	1st. curtain brake spring-B	一幕ブレーキSP—B	1
2006-2184-04	2nd. curtain brake spring	制御カム係止レバーSP	1
2017-2184-01	1st. curtain brake spring-A	一幕ブレーキSP—A	1
2017-2191-02	Shutter magnet bobbin	シャッターマグネットボビン	1
2017-2192-03	2nd. curtain brake spring-A	二幕ブレーキSP—A	1
2017-2205-01	Lead wire pressure	リード線押え	1
2017-2212-01	Shutter light shield plate	シャッター遮光シート	1
2006-2718-02	Control cam operation spring	制御カム駆動SP	1
2006-2749-02	Shutter magnet core	シャッターマグネット鉄芯	1
2006-2758-03	Over charge spring	吸着片オーバーチャージSP	1
2006-2762-02	Magnet collar	マグネット取付カラー	1
2006-2773-03	Trigger contact operation lever	トリガー接片作動レバー	1
9612-1616-07	Phillips type screw	十字穴付なべ小ねじ	1
9612-1625-01	Phillips type screw	十字穴付なべ小ねじ	4
9612-1625-07	Phillips type screw	十字穴付なべ小ねじ	1
9721-0120-13	E ring	E リング	1
9721-0150-13	E ring	E リング	1

X-300 Code No.2025-100
X-370 Code No.2025-300



Part No.	Part Name		Qty
2017-0209-02	Shutter base plate set	シャッター台板セット	1
2006-0215-11	1st. curtain stop lever set	一幕係止レバーセット	1
2017-0226-01	1st. curtain shutter gear set	一幕シャッターギヤーセット	1
2017-0227-01	2nd. curtain shutter gear set	二幕シャッターギヤーセット	1
2017-0229-01	2nd. curtain stop lever set	二幕係止レバーセット	1
2017-0242-02	Shutter curtain set	シャッター幕セット	1
2017-2104-01	Charge gear-B	チャージギヤーB	1
2017-2105-01	Charge gear-A	チャージギヤーA	1
2006-2114-02	1st. curtain stop lever spring	一幕係止レバーSP	1
2017-2123-02	2nd. curtain stop lever spring	二幕係止レバーSP	1
2017-2126-01	Curtain shaft receiver-B	幕軸受B	1
2006-2130-01	Adjusting screw	幕軸調整ビス	1
2017-2131-02	Ribbon guide plate	幕リボンガイド板	1
2017-2132-01	Screw	幕リボンガイド板止めねじ	1
2006-2144-02	2nd. curtain roller-B	二幕ローラーB	2
2017-2147-01	Ratchet	SP筒軸止めラチエット	2
2017-2148-02	Ratchet stop spring	ラチエット止めばね	1
2017-2185-01	Brake stopper	ブレーキストッパー	2
9613-1418-07	Phillips type screw	十字穴付半丸皿小ねじ	1
9615-1416-07	Phillips type screw	十字穴付皿小ねじ	2
9721-0120-13	E ring	E リング	1
9721-0150-13	E ring	E リング	2
9791-2140-40	Washer	薄ワッシャー	1

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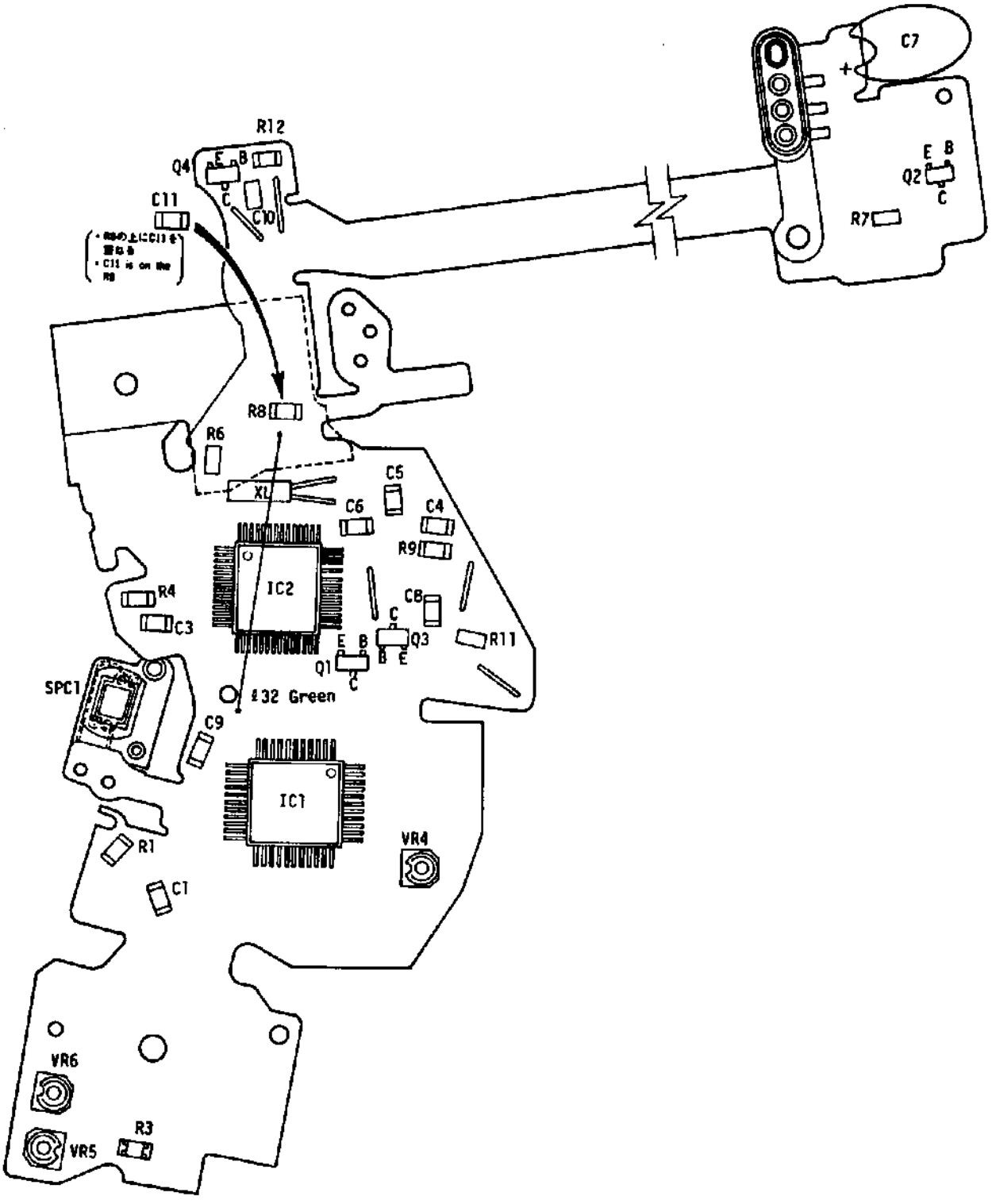

Flexible PC board set

Assy. Part No. 2025-0401-01 Assy. Part Name フレキシブル基板セット

Symbol	Part No.	Part Name (Maker,Type)	Qty.
IC1	2024-4301-01	IC (OKI,MSA402GS)	1
IC2	2024-4302-02	IC (OKI,MSM5237GS)	1
Q1	9363-1032-01	Transistor (TOSHIBA,2SA1162)	1
	9363-1032-02	Transistor (TOSHIBA,2SA1162)	
	9363-1032-03	Transistor (TOSHIBA,2SA1162)	
Q2	9362-1261-01	Transistor (SANYO,2SD1048)	1
	9362-1261-02	Transistor (SANYO,2SD1048)	
	9362-1261-03	Transistor (SANYO,2SD1048)	
Q3,Q4	9362-1032-01	Transistor (TOSHIBA,2SC2712)	2
	9362-1032-02	Transistor (TOSHIBA,2SC2712)	
	9362-1032-03	Transistor (TOSHIBA,2SC2712)	
	9362-1032-04	Transistor (TOSHIBA,2SC2712)	
XL	9373-4162-01	Crystal resonator (SEIKO,C-2-32.7)	1
SPC1	2024-0491-01	Silicon Photo cell	1
R4,R1	9432-2246-62	Fixed resistor (KYOTO CERAMIC,1/8W 220KΩ)	2
R3	9432-1536-62	Fixed resistor (KYOTO CERAMIC,1/8W 15KΩ)	1
R6	9422-1016-62	Fixed resistor (MATSUSHITA,1/8W 100Ω)	1
R7	9422-1026-62	Fixed resistor (MATSUSHITA,1/8W 1KΩ)	1
R8	9432-3357-61	Fixed resistor (MATSUSHITA,1/8W 3.3MΩ)	1
R9	9432-1068-61	Fixed resistor (HOKURIKU,1/8W 10MΩ)	1
	9432-2068-61	Fixed resistor (HOKURIKU,1/8W 20MΩ)	
	9432-3068-61	Fixed resistor (HOKURIKU,1/8W 30MΩ)	
R11	9422-6836-62	Fixed resistor (MATSUSHITA,1/8W 68KΩ)	1
	9422-8236-62	Fixed resistor (MATSUSHITA,1/8W 82KΩ)	
	9422-1246-62	Fixed resistor (MATSUSHITA,1/8W 120KΩ)	
	9422-1846-62	Fixed resistor (MATSUSHITA,1/8W 180KΩ)	
	9422-3946-62	Fixed resistor (MATSUSHITA,1/8W 390KΩ)	
R12	9431-3348-62	Fixed resistor (ALPS,1/16W 330KΩ)	1
VR4	9472-3329-63	Variable resistor (MATSUSHITA,EVM-14G 3.3KΩ)	1
VR5	9472-1539-63	Variable resistor (MATSUSHITA,EVM-14G 15KΩ)	1
VR6	9472-1039-63	Variable resistor (MATSUSHITA,EVM-14G 10KΩ)	1
C1	9565-1034-64	Condenser (Ceramic)(MURATA,0.01μF/50V)	1
C3	9564-4734-64	Condenser (Ceramic)(MURATA,0.047μF/25V)	1
C4	9564-1034-61	Condenser (Ceramic)(KYOTO CERAMIC,0.01μF/25V)	1
C6,C5	9564-2204-65	Condenser (Ceramic)(KYOTO CERAMIC,22PF/25V)	2
C7	9531-1575-61	Condenser (Tantalum)(MATSUO,150μF/3.15V)	1
C8	9565-3338-65	Condenser (Ceramic)(MURATA,0.033μF/50V)	1
C9	9565-4705-62	Condenser (Ceramic)(MURATA,47PF/50V)	1
C10	9565-4738-65	Condenser (Ceramic)(MURATA,0.047μF/50V)	1
C11	9565-3324-64	Condenser (Ceramic)(MURATA,3300PF/50V)	1
ℓ32	9391-0807-05	Lead wire (Green, φ0.08/7, ℓ=35)	1

Lead wires list

Symbol	Part No.	Color	Type	Qty.
ℓ3	9391-0507-03	Orange	φ 0.05/7 ℓ=70	1
ℓ4	9391-0507-06	Blue	φ 0.05/7 ℓ=70	1
ℓ5	9391-0507-01	Brown	φ 0.05/7 ℓ=80	1
ℓ6	9391-0507-01	Brown	φ 0.05/7 ℓ=85	1
ℓ7	9391-0507-05	Green	φ 0.05/7 ℓ=90	1
ℓ8	9391-0507-03	Orange	φ 0.05/7 ℓ=95	1
ℓ10	9391-0807-08	Gray	φ 0.08/7 ℓ=40	1
ℓ11	9391-0807-06	Blue	φ 0.08/7 ℓ=95	1
ℓ12	9391-0807-04	Yellow	φ 0.08/7 ℓ=95	1
ℓ13	9391-0807-02	Red	φ 0.08/7 ℓ=105	1
ℓ14	9391-0807-09	White	φ 0.08/7 ℓ=75	1
ℓ15	9391-0807-03	Orange	φ 0.08/7 ℓ=105	1
ℓ16	9391-0807-08	Gray	φ 0.08/7 ℓ=65	1
ℓ17	9391-0807-05	Green	φ 0.08/7 ℓ=115	1
ℓ19	9391-0807-00	Black	φ 0.08/7 ℓ=35	1
ℓ21	9391-0807-04	Yellow	φ 0.08/7 ℓ=160	1
ℓ22	9391-0807-02	Red	φ 0.08/7 ℓ=30	1
ℓ25	9391-0807-00	Black	φ 0.08/7 ℓ=50	1
ℓ26	9391-0807-00	Black	φ 0.08/7 ℓ=80	1
ℓ27	9391-0807-07	Purple	φ 0.08/7 ℓ=145	1
ℓ28	9391-0807-07	Purple	φ 0.08/7 ℓ=50	1
ℓ30	9391-0807-09	White	φ 0.08/7 ℓ=65	1
ℓ32	9391-0807-05	Green	φ 0.08/7 ℓ=35	1
ℓ35	9391-0807-01	Brown	φ 0.08/7 ℓ=70	1
ℓ36	9391-0807-08	Gray	φ 0.08/7 ℓ=70	1
ℓ37	9391-0807-11	Light Blue	φ 0.08/7 ℓ=170	1
ℓ39	9391-0507-00	Black	φ 0.05/7 ℓ=30	1

REPAIR

■ The contents of this manual are mainly related to the adjustment procedures for the 2025.

Except for Exposure adjustment, Installation of external parts, see 2024 Service Manual.
"Page" column provide with ※ shows related page of 2024 Service Manual Repair Guide.

■ Assembly and adjustment procedures

	Page	※ Page
[1] Body assembly 1 (spool, sprocket, winding base plate A)		1
■ Sprocket gear positioning method		2
[2] Body assembly 2 (winding shaft)		3
■ Winding gear positioning method		4
■ Reversion stop lever stop timing adjustment		4
[3] Body assembly 3 (winding base plate B)		5
■ Overrun eccentric pin adjustment		6
■ Check of winding mechanism		7 ~ 8
[4] Front base plate block assembly 1 (shutter, mirror box, magnet base plate)		9
■ Check of magnet attraction		12
[5] Front base plate block assembly 2 (finder block, bayonet mount, front cover, etc.)		13
[6] Front base plate block assembly (mounting front base plate block onto body)		14
■ Shutter gear position adjustment		15
■ Shutter charge adjustment		16
[7] Flexible P.C board installation		17
■ Body back adjustment		19
■ Finder back adjustment		20
■ Exposure adjustment		
[1] ASA inclination adjustment	3	
[2] A/D conversion reference voltage adjustment	3	
[3] Manual SS adjustment	4	
[4] A-auto level adjustment	5	
■ Check of LED indication	5	
■ Check and adjustment of release lock voltage and LED blink voltage	6	
■ Check of limits at high and low shutter speeds	6	
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■ Shutter block assembly procedure		31
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■ Adjustment and checks to be made

	Page	※ Page
[1] Body, winding unit		
■ Sprocket gear positioning	2	
■ Winding gear positioning	4	
■ Film counter operation gear positioning	5	
■ Reversion stop lever stop timing adjustment	4	
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■ Reversion stop lever timing check	7	
■ Winding operation lever timing check	8	
[2] Shutter operation		
■ Shutter gear position adjustment	15	
■ Shutter charge adjustment	16	
■ Shutter curtain position check	33, 34	
■ Mirror magnet attraction check	12	
■ Release lock voltage check	28	
■ Synchro X time lag	8	
[3] Shutter speed		
■ Curtain speed adjustment	4, 8	
■ Manual SS adjustment	4, 8	
[4] Auto exposure		
■ ASA inclination adjustment	3	
■ A/D conversion reference voltage adjustment	3	
■ A-auto level adjustment	5	
■ Check of release magnet attraction	12	
■ Check of limits at high and low shutter speeds	6	
[5] LED		
■ Check of LED indication	5	
■ Check of LED blink voltage	6	
[6] Viewfinder, focusing		
■ Body back adjustment	19	
■ Finder back adjustment	20	
■ Mirror angle adjustment	39	

■ Precautions

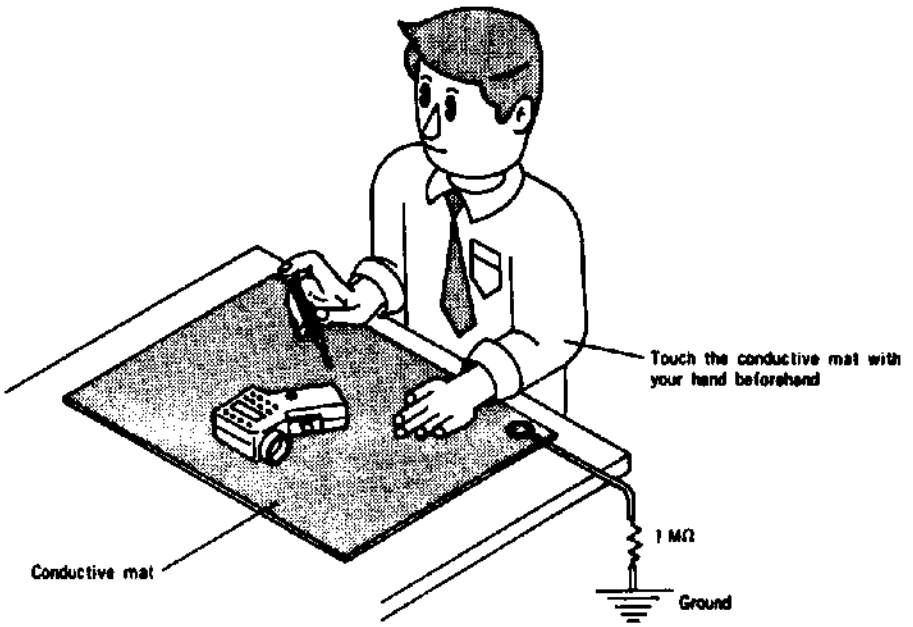
■ The following precautions must be taken concerning all plastic parts.

1. When cleanig, use Flonsolve or alcohol. Do not use thinner, ketone, ether, etc.
2. Secure all parts with the specified screws, taking care not to exent excessive stress to them.

■ Handling of the flexible board

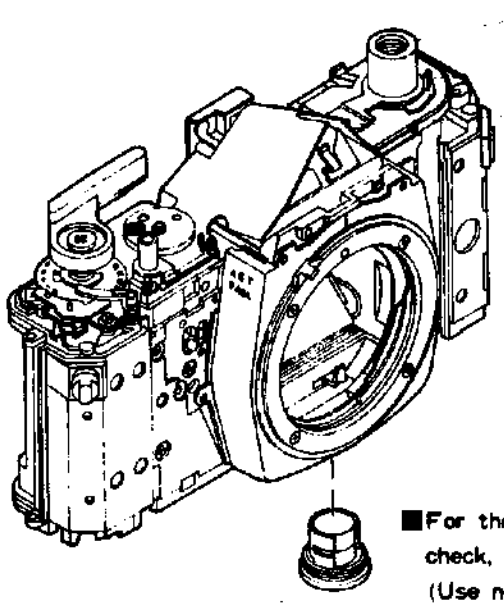
The flexible board uses MOS ICs and is very sensitive to static electricity. Therefore, the following points must be kept in mind when repairing.

- When handling the flexible board itself or wiring it to the body, use a conduction mat to prevent static electricity, and perform all work as shown in the illustration below.



■ When grounding is impossible, connect the cable to a large metal plate (steel desk or shelf).

■ Preparation for adjustments

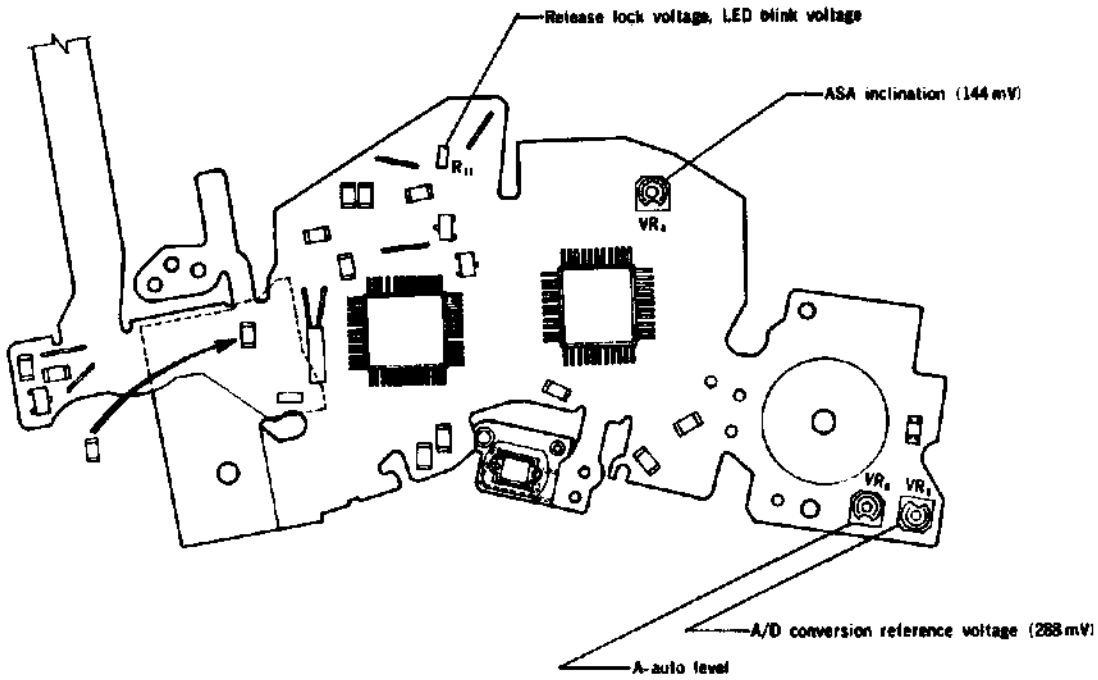


■For the general adjustment or check, use battery.
(Use new battery)

Exposure adjustment

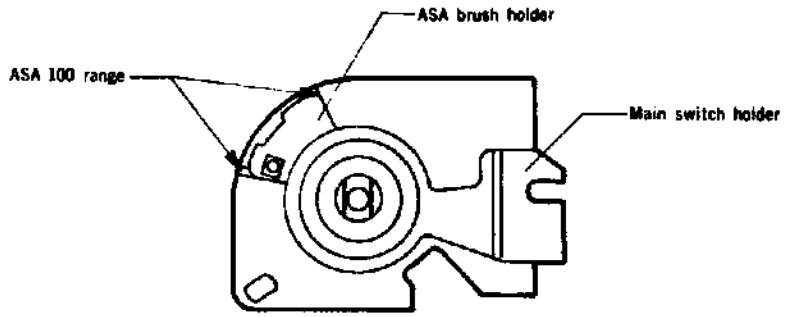
■Resistor positions and adjustments

■Fig. 1



■Beforehand set ASA film speed to ASA 100 properly as below:
Set ASA brush holder within range of ASA 100.

■Fig. 2



SV resistor plate

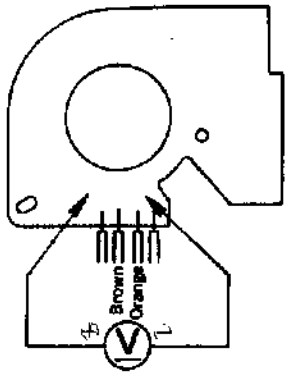
1 Adjustment of ASA inclination

■Measuring instrument : Digital multimeter (Type 2508, 3476, 2507)

■Adjustment procedure

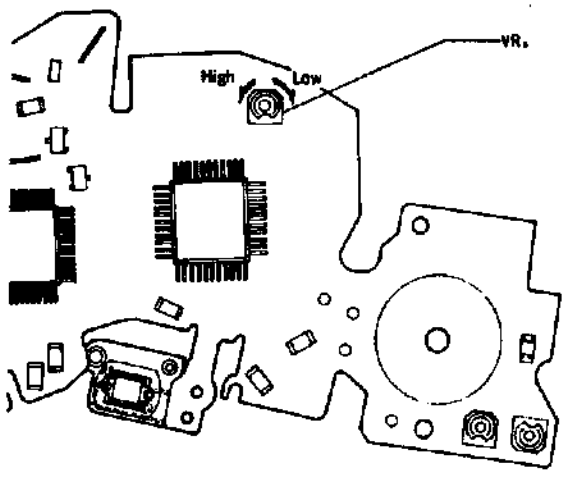
1. Set the metering switch to ON and adjust by turning VR_4 so that the voltage at the point in Fig. 1 is **144±2mV** (In case of 25°C room temperature)
   Depending on the temperature when adjusting, use the table below to get adjustment voltage.

■Fig. 1



(Adjustment voltage)

Temperature (°C)	15±2.5	20±2.5	25±2.5	30±2.5
Adjustment voltage (mV)	139±2	141.5±2	144±2	146.5±2



2 Adjustment of A/D conversion reference voltage

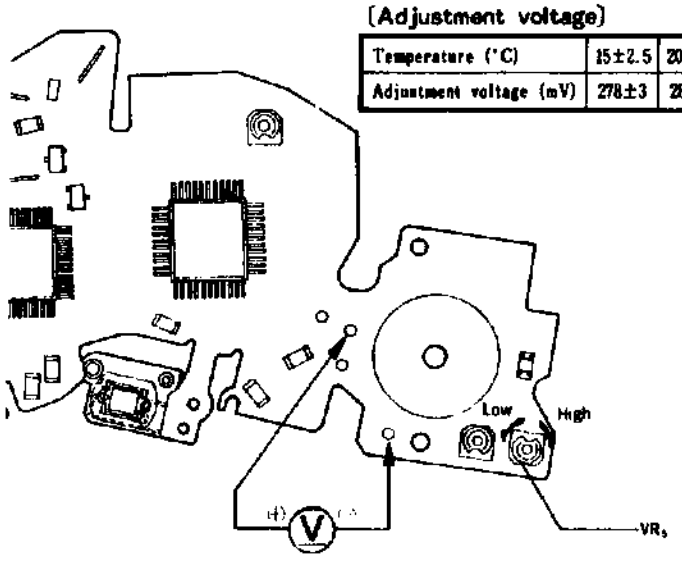
■Measuring instrument : Digital multimeter (Type 2508, 3476, 2507)

■Adjustment procedure

1. Set the metering switch to ON and adjust by turning VR_5 so that the voltage at the point in Fig. 2 is **288±3mV** (In case of 25°C room temperature)
   Depending on the temperature when adjusting, use the table below to get adjustment voltage.

(Adjustment voltage)

Temperature (°C)	15±2.5	20±2.5	25±2.5	30±2.5
Adjustment voltage (mV)	278±3	283±3	288±3	293±3



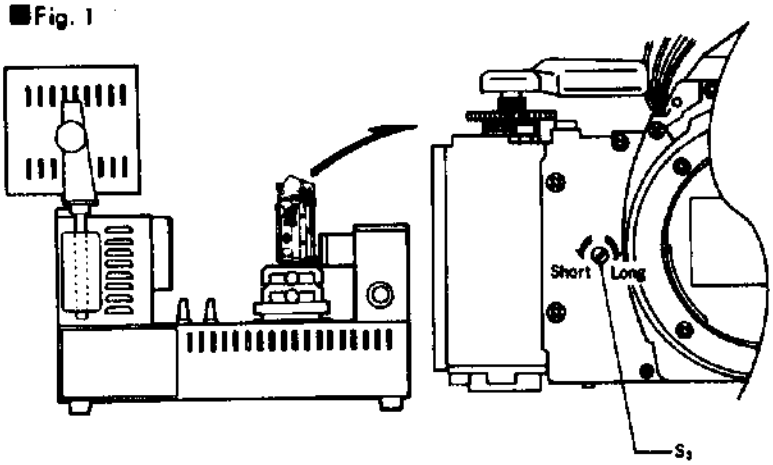
3 Adjustment of manual SS

■Measuring instruments : Shutter tester (Model S-2101, FS-1DMN4)

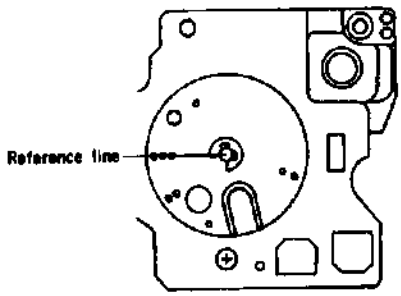
■Adjustment procedure

- Determine position of TV brush, referring to Fig. 2, or looking at shutter speed LED.

■Fig. 1



■Fig. 2 Relation between TV brush holder position and manual SS



1. Shutter speed adjustment and check (see the table below)

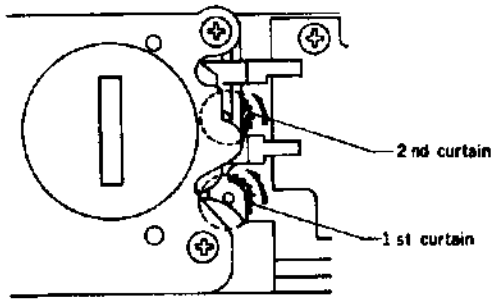
Step	Item	Part adjusted	Adjustment (check)	Remarks
①	1/1000 curtain speed check	——	(Both 1 st & 2 nd curtains are within 13 ms.)	If it is more than 13 ms or less than 10 ms, adjust the 2 nd curtain speed.
②	1/1000 adjustment	S_3 eccentric pin	0.98 ms	——
③	1/60 check	——	(16~18.5 ms)	
④	X time lag	——	(Range A : 0.4 ms or more) (Range B : 2.4 ms or more)	Check it with SS 1/60 and if is defective, perform the adjustment on P. 8.

- When the exposure unevenness at steps ②~③ is over 0.3 EV in both B-A and B-C ranges, and over 0.4 EV in the A-C range, adjust the curtain speed as follows.
- For the shutter speed standard, refer to the inspection standard.

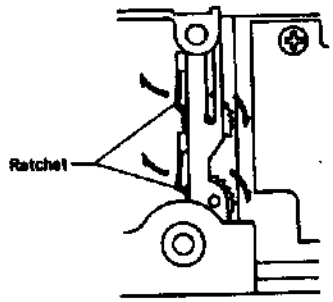
2. Curtain speed adjustment

Adjust by turning the ratchet so that the 1 st and 2 nd curtain speeds are **11±0.3ms** at 1/1000.

■Fig. 3 (Increasing the curtain speed)



■Fig. 4 (decreasing the curtain speed)



- Remove the battery case base plate while pushing ratchet to release the ratchet claw and the rachet return.
  (Do not return it completely.)
- Return it sufficiently and adjust by slowly increasing the curtain speed.

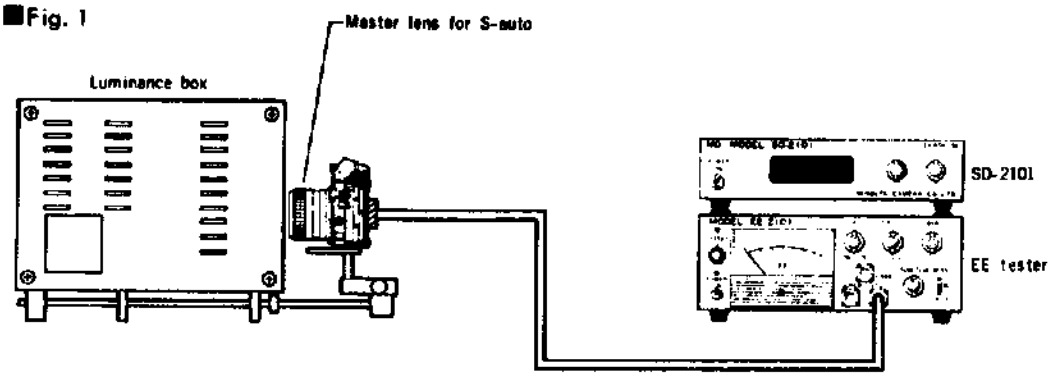
4 Adjustment of A-auto level, check of LED indication

■Measuring instruments : Luminance box (Model L-2101, L-222, L-223)
: EE tester (Model EE-2101, EE-2111)
: SS adaptor for EE tester (Model SD-2101)
: Master lens for S-auto (2005-0001-75)

■Adjustment procedure

1. Set the camera and measuring instruments as follows.
   • After setting the master lens, turn it counterclockwise to put aside the looseness to one side.

■Fig. 1



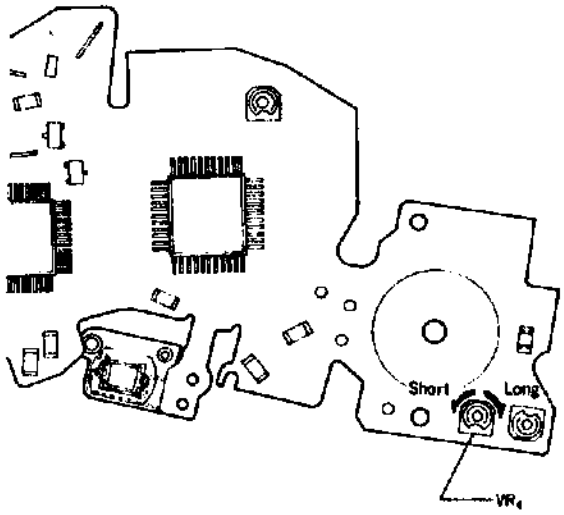
• Luminance box	• Camera	• Master lens	• EE tester	• SD-2101
K value : 1.2	Shutter dial : A	Aperture : F 5.6	K value dial : 1.2	Aperture switch : F 5.6
※Luminance : EV 10, 15	ASA : 100	Distance : ∞	ASA dial : 100	Luminance switch : Same as luminance box.

※When using luminance box (L-222 or L-223), set it at EV 11, and use a ND filter (MINOLTA ND 50% FOR ADJUSTMENT).

2. Adjust and check as follows:

Step	Luminance	Shutter speed adjustment	EE level allowable range	Part adjusted	Indication allowable range (±0.5EV)			
1	EV 10	34 ms	—	VR_6 (Fig. 2)	1/60	☼	■	■
					1/30	☼	☼	☼
					1/15	■	■	☼
2	EV 15	—	±0.4EV	(Check only)				

■Fig. 2



■ Check and adjustment of release lock voltage and LED blink voltage

■Check

[1]Release lock voltage	Standard	2.46±0.1V
[2]LED blink voltage	Standard	2.56±0.1V

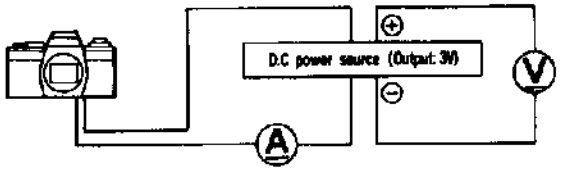
• In case of out of standard above, adjust those as following procedure.

■Measuring instruments : Constant voltage D.C power source (MODEL 524B, E-1, E-2)
: Digital multimeter (Type 2508, 3476, 2507)
: Direct current tester

■Checking procedure

1. Check the current consumption at B setting (incl'd ✱ indication) using measuring instruments as follows.

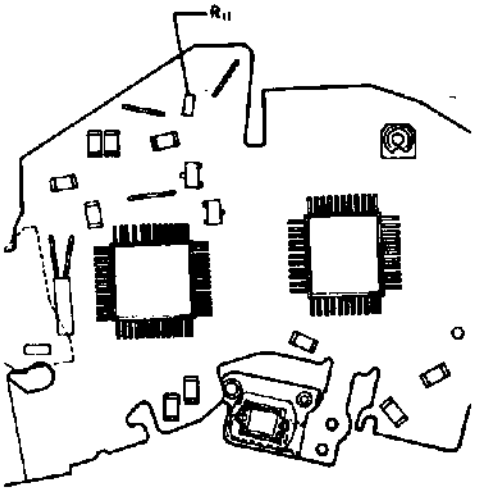
■Fig. 1



• Camera
Shutter dial : B
Touch SW : ON
Connection of power source : ⊕···Battery case contact
⊖···Batter case base plate

2. Measure the release lock voltage while reducing slowly the voltage of D.C power source from 3V.
3. In case of out of standard, replace R_{11} (68-390KΩ).

■Fig. 2



■ Checking high and low shutter speed limits

■Measuring instrument : Shutter tester (Model S-2101, FS-1DMN4)

[1]High shutter speed limit (shutter speeds in other than high luminance operation in A mode.)

• Check the shutter speed with the shutter dial set to A.

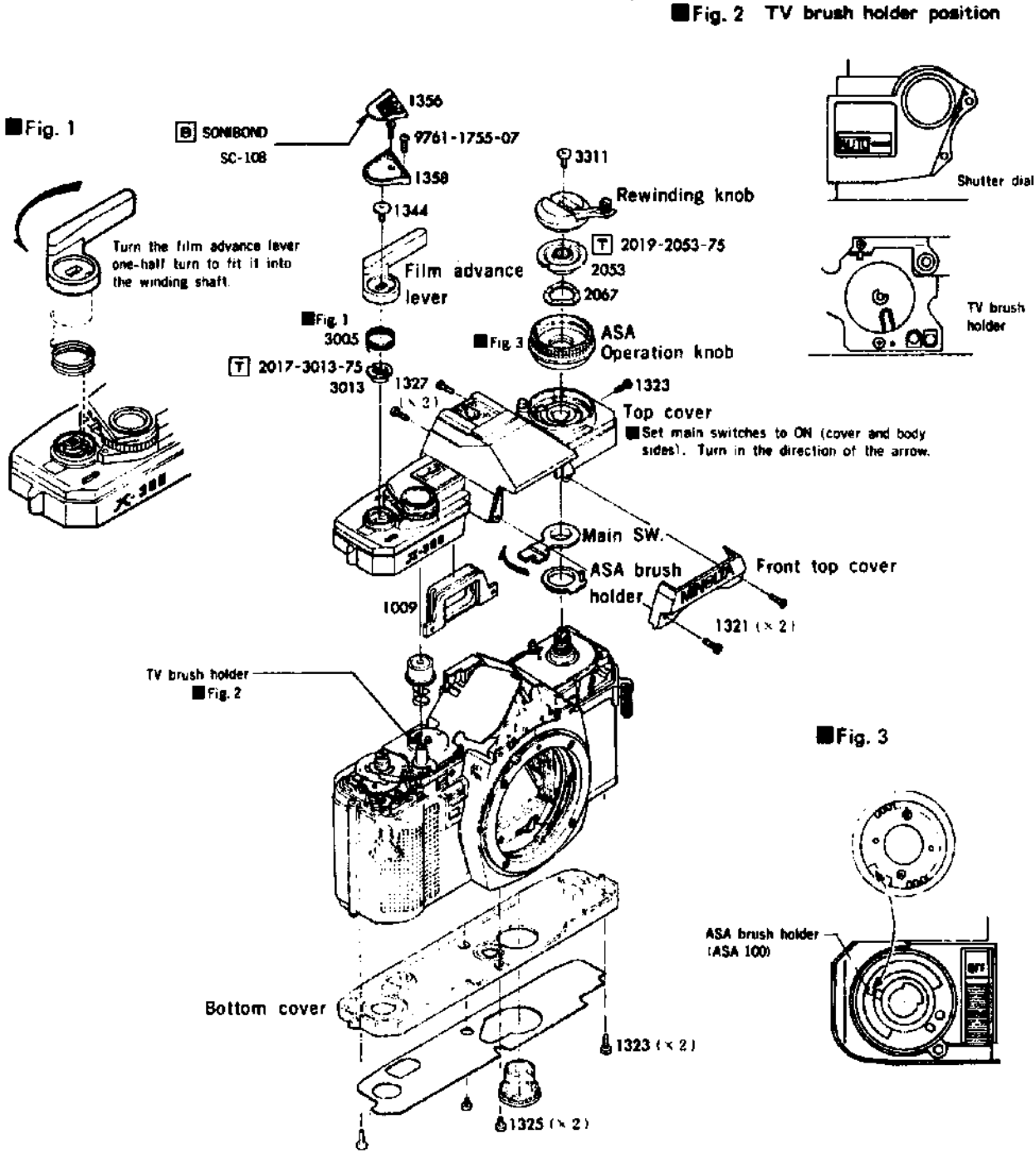
Standard	0.69~1.38 ms

[2]Low shutter speed limit (shutter speeds in other than low luminance operation in A mode.)

• Set the shutter dial to A, and then check the exposure time with light to the receiver interrupted.

Standard	Within 5 sec.

■ External parts (completion)



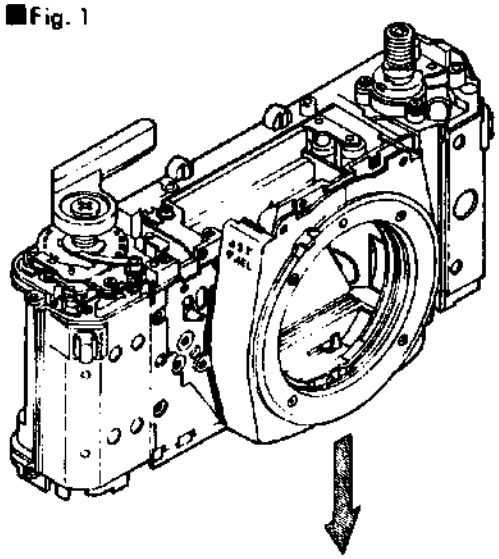
■ Shutter block adjustment

■ **Measuring instruments** : Camera standard tester (Model ST-5101)
: Shutter tester (Model S-2101, FS-1DMN4)

■ **Preparations**

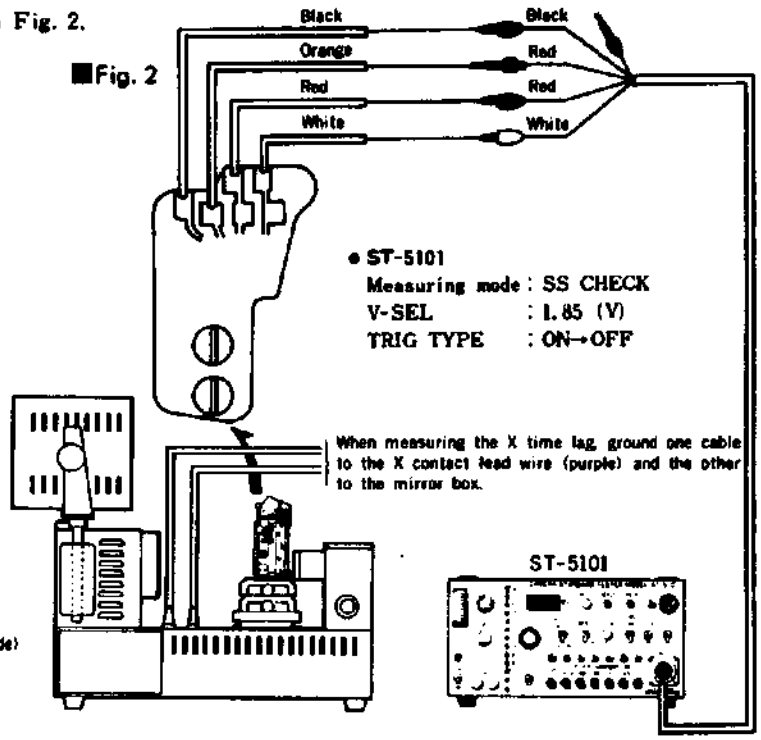
1. Mount the shutter onto the front base plate block and install it onto the body (as shown in Fig. 1).
2. Connect the tester as shown in Fig. 2.

■ Fig. 1



Operate the shutter as described on P. 15. (2024 Repair Guide)

■ Fig. 2



■ **Adjustment procedure**

[1] **Curtain speed adjustment**

1. Set the SS-SEL of ST-5101 to 1000 and adjust by turning the curtain spring cylinder shaft so that both curtain speeds are **11±0.3ms**. (Fig. 3)
   - When the curtain is not open, shift SS-SEL to 60 and make a rough adjustment beforehand so that both curtain speeds are about 12 ms, and then adjust again with the SS-SEL set to 1000.

[2] **Shutter speed adjustment**

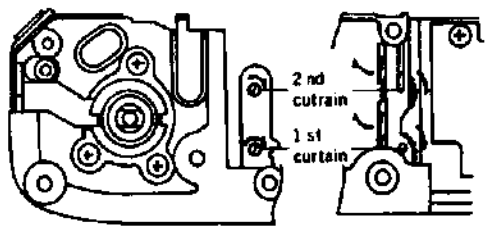
1. With the SS-SEL set to 1000, release the shutter and adjust by turning the S_3 eccentric pin so that the shutter tester indicates **0.98ms**. (Fig. 4)

[3] **X time lag adjustment**

1. Connect the synchro cord of the shutter tester to the camera. (Fig. 2)
2. With the SS-SEL set to 60, release the shutter and check to be sure that the speed is **0.4ms or more in range A and 2.4ms or more in range B**.

   To make the adjustment, bend the end of the X contact.

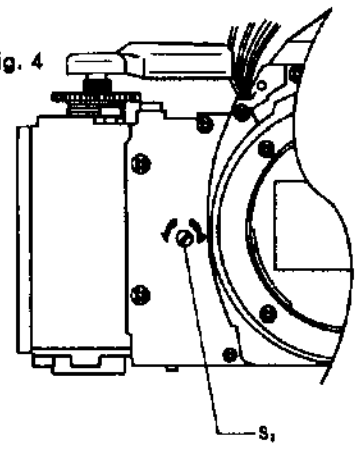
■ Fig. 3



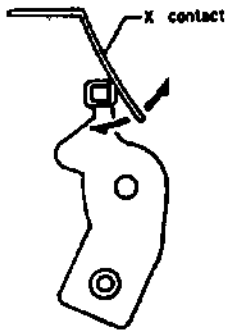
● Increasing the curtain speed

● Decreasing the curtain speed

■ Fig. 4



■ Fig. 5



TROUBLE-SHOOTING

1. Use of Trouble-shooting

1. This trouble-shooting chart describes symptoms and causes of troubles found on the camera side.
2. Even when trouble is found on the camera side, its cause is not always attributable to the malfunction of the camera in relation to the exchangeable lens, winder, motor drive and exclusive flash. Therefore, use this trouble-shooting chart upon confirmation of trouble on the camera after checking combined performance with the accessories according to claim contents.

2. Description

1. Trouble described here is due to a single case only. Trouble due to a plurality of causes should be checked collectively on the basis of the causes listed in this chart.
2. This trouble-shooting deals mainly with electrical causes, as well as covering part of mechanical causes.

3. Servicing Precautions

1. Type 2507 digital multimeter is basically used for measurement. Any other kind of measuring instrument, however, may be used, if its minimum input impedance is more than 10MΩ.
2. Use this tester for voltage checks and a tester of less than 3 V for measuring conduction.
3. Trouble is most unlikely to occur in electronic parts, such as ICs, diodes, transistors, resistors, and capacitors. Therefore, check the cause of trouble, with the focus on the defective soldering of lead wires and electrical parts, and switching contacts.
4. When checking soldered or plated parts, avoid pressing the parts or pulling lead wires unnecessarily.
5. Since voltage measuring parts are narrow, mount a pin or something similar at the tip of an alligator clip for measurement.
6. When measuring switching patterns, special care should be taken so that the patterns outside switch operation are free from flaws. For switch contacts, measure their base, which is not directly affected by contact pressure.
7. Be sure to turn off the power switch before removing electrical parts (when a constant-voltage regulated power supply is used).
8. The ideal temperature range for the soldering iron tip is 290°C to 340°C. If the temperature is higher, however, perform soldering quickly. Also, be sure to clean the chip when soldering.

4. Description on Trouble-shooting Table and Trouble-shooting Chart

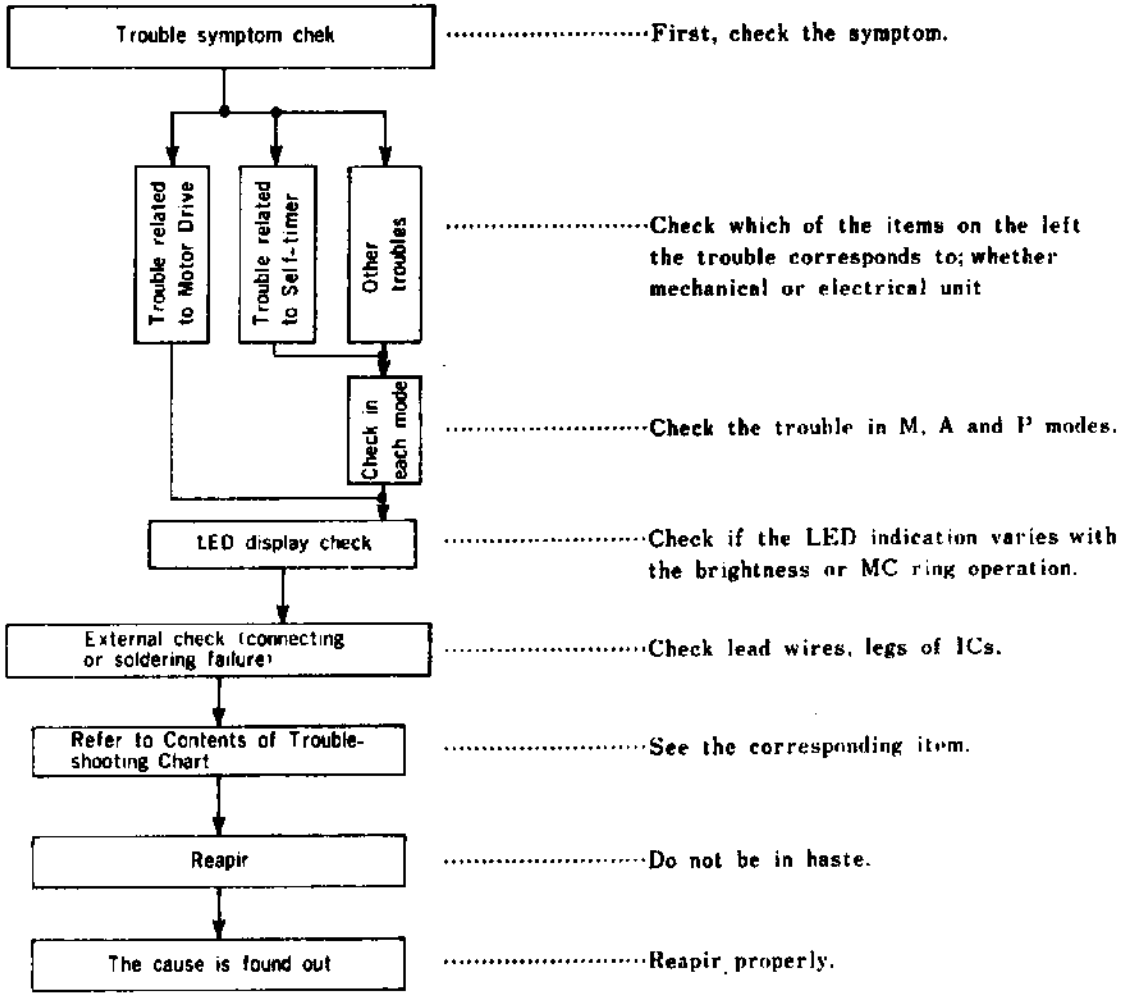
4-1. Trouble-shooting Table

1. From symtom, trouble cause can be found.
2. The Trouble-shooting Table combines the "INDEX" and summary of details of "Trouble-shooting Chart.
   Accordingly, use those properly as the needs of the case demand.

4-2. Trouble-shooting Chart

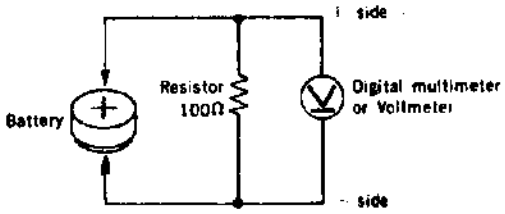
1. The chart presents the checkpoints to be followed from the symptom to finding the cause of trouble.
2. The voltage for each checkpoint is the value when SW_0 or SW_1 is ON upon completion of film winding (before releasing). It is a potential difference from ⊣ of power supply.
3. For all trouble symptoms other than "Electromagnetic release does not operate," check their cause, assuming that the electromagnetic release operates properly.
4. The chart shows the check in the ⬚ is done by operation and in the ▭ by measurement.

5. Repair procedure


Trouble symptom chek
First, check the symptom.
Trouble related to Motor Drive
Trouble related to Self-timer
Other troubles
Check which of the items on the left the trouble corresponds to; whether mechanical or electrical unit
Check in each mode
Check the trouble in M, A and P modes.
LED display check
Check if the LED indication varies with the brightness or MC ring operation.
External check (connecting or soldering failure)
Check lead wires, legs of ICs.
Refer to Contents of Trouble-shooting Chart
See the corresponding item.
Reapir
Do not be in haste.
The cause is found out
Reapir properly.

6. Battery Capacity Check

1. A 100Ω resistor is paralleled with the battery at normal temperature (25±25°C), as illustrated. A digital multimeter or voltmeter is connected to the battery in parallel to the resistor to measure the voltage. In this case, be sure to perform quick measurement.
2. The battery, with its voltage more than 1.4 V, is regarded as normal.



INDEX

for Trouble-shooting Table/Chart

■ **Trouble related mechanism** (Winding and shutter releasing are impossible)·····P. 17

Ⓐ Returning winding lever to original position after winding completion, shutter curtains return to position of shutter released.

Ⓑ Charge operation plate set does not return at winding completed.

Ⓒ Others

★Explanation of Trouble-shooting Table

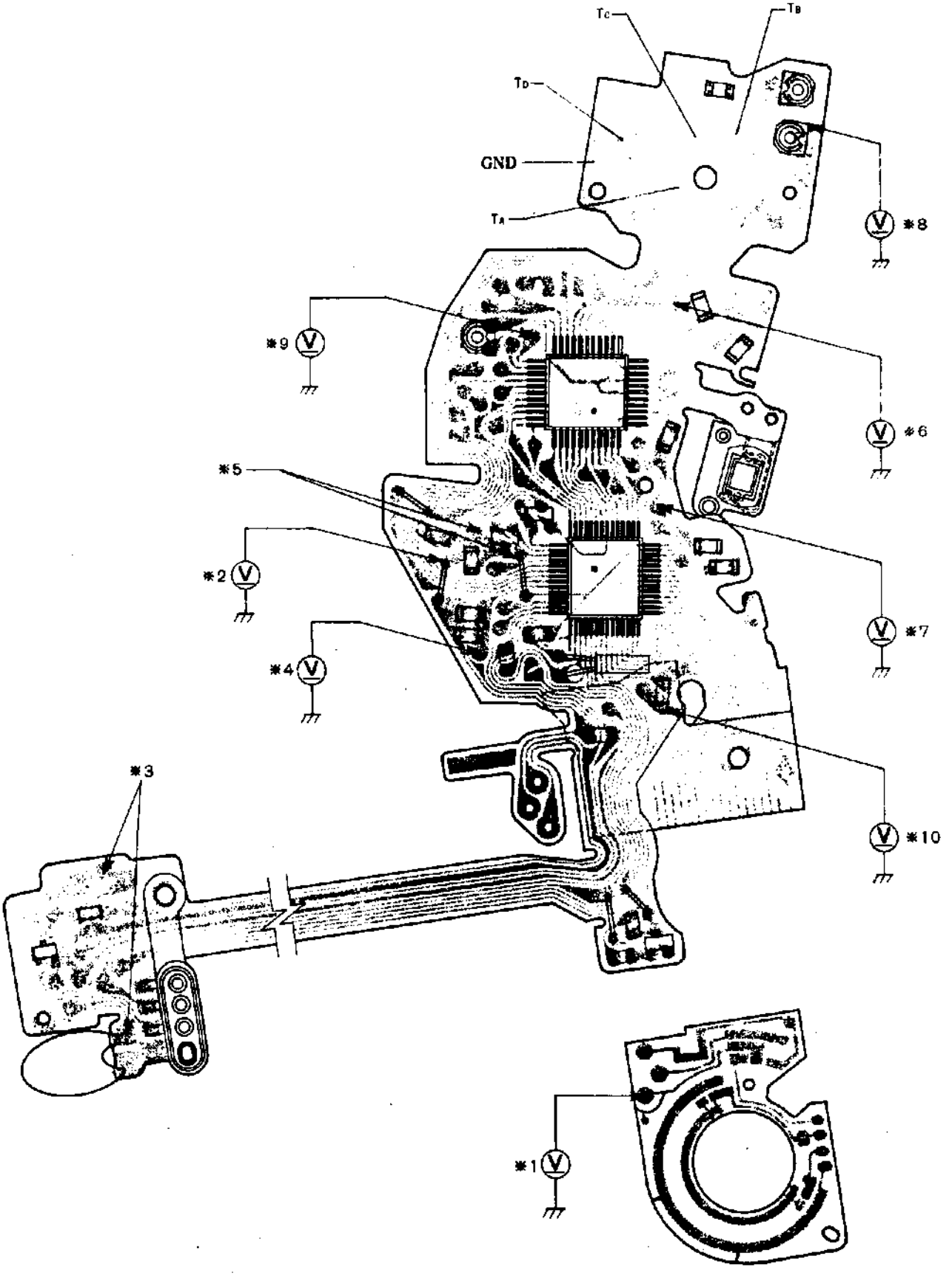
1. _ of number of SW. or Lead Wire shows·····Shortcircuit with GND.
   (e.g. SW-④·····Shortcircuit SW_4 and GND.
2. ◯ of IC or Others shows shortcircuit between·····• IC pins.
   • Joint part and printed wiring.
   (e.g. IC_1 (40-41) ·····Shortcircuit IC_1 40 and 41
   SPC (A-K) ····· Shortcircuit SPC anode and cathode)
3. ◯ of others shows····· Shortcircuit by elements failure.
4. Only numeral without any marks shows;
   For SW·····Contact failure.
   Others·····Cold soldering or disconnection.

■ **Trouble related electro unit**

Symptom \ Cause		Page	SW	Lead Wire	VR	SL	R	C	Q	J (Jump lead)	IC-1	IC-2	OTHERS
Shutter release failure	No LEDs light, shutter is not released···Release impossible even with Main SW. (S_4) ON→OFF→ON operation.	6	5	22(Red)					1	2	37. (40-41)	21. 29. (11-12) (43-44) (44-45)	Joint part a-c XL
	LEDs remain light, and shutter is not released with release SW.(S_2) ON···Release impossible even with Main SW.(S_4) ON→OFF→ON operation.	6	2. ④	⑰(Yellow) 36(Grey)			12		4	4. 5		43	
	With release SW.(S_2) ON, LEDs go out, but shutter is not released···Release impossible, and LEDs light with Main SW.(S_4) ON→OFF→ON operation.	6		32(Green) SL1(Green, White, (White))		1	7	7	2		10. 11	15	
	Shutter is not released with remote control SW.(S_{10}) ON···Release possible with operating button operation.	7		10(Grey) 39(Black)									
	Shutter is not released even though self-timer LED lights with metering SW. (S_6 or S_7) ON···No finder LEDs light.	7								1	39		
	Main SW.(S_1) ON makes shortcircuit, resulting in shutter release impossible and no lighting LEDs.	7		⑱(Red)									Joint part (b-c)
	Main SW.(S_4) and metering SW.(S_6 or S_7) ON make shortcircuit, resulting in release impossible and no LEDs lighting.	7					③	①					
	After shutter releasing with Main SW.(S_4) ON→OFF→ON, release impossible and no LEDs light.	7	5	21(Yellow)								42. (45-46)	
	Shutter is released when winding up.	7	⑦. ⑪	⑲(Grey). ㉔(Grey)									Remote control shortcircuited
	LEDs light and, shutter release is impossible with Main SW.(S_4) OFF.	7											Joint part (a-c)
	Shutter is released only once, after turning main switch ON (when slower shutter speed LED 1/30-1 sec glows).	7				2		①					
Finder indication failure	No LEDs light with metering SW.(S_6 or S_7) ON···Shutter operates normally.	8	0, 1	35(Brown)			9					37. 48	Joint part 1
	No LEDs light with metering SW.(S_6 or S_7) ON···Shutter stays open with self-timer LED ON when released.	8										14	
	Only "M" does not light.	9										50. (49-50)	Joint part 2
	Part of LEDs does not light.	9										1~9, 50~56	Joint part 2~17
	Self-timer LED lights with Main SW.(S_4) ON.	6		㉔(Grey)							(12-13)		
	LEDs light with Main SW.(S_4) ON.	6	① ⑭	⑰(Yellow) ㉕(Brown)									
	LEDs light by Main SW.(S_4) ON with shutter speed dial set at 30~1000 or A.	6										38-37	
	When voltage is under specified B.C voltage, shutter release lock does not operate with LEDs ON.···No mode LED blinks.	9									3	23	
	When decreasing voltage, mode LED remains ON; does not blink···No LEDs light when release locked	9									2	24	

Symptom		Cause	Page	SW	Lead Wire	VR	SL	R	C	Q	J (Jump wire)	IC-1	IC-2	OTHERS
Shutter failure	Shutter curtains travel in high speed, or without slit	LED indication is normal. Shutter curtains travel without slit in M and A modes.	9		13 Red 14 White		2			3	1		30 (29-31)	
		In A mode shutter operates in high speed with △ blinking. 1 LED indication remains the same when changing AV, film speed and luminance	9		7 (Green) 8 (Green)	2 (SV) 4 5		3	3 9			6, 8, 14, 17, 27, 28, 29, 43 (1-6) (5-6) (6-7) (7-A) (13-14) (11-12) (14-15) (3-24) (25-26) (25-43)	17 19	
		2 LED indication remains the same only when changing AV.	10		3 (Orange)	2 (AV)								
		3 LED indication remains the same only when film speed changing.	10		6 (Brown)									
		4 LED indication does not change in accordance with luminance.	10									21-22		SPC 1 - (A-K)
		LEDs are normal. In M and A modes shutter curtains travel without slit when set to high speed.	10	3	15 (Orange)								12	
		In A and M modes, shutter speed remains 1/60 with LEDs "M" and "1/60" lighting.	10											Looseness of touch SW earth plate (2603-4002) screw.
		LED indication is normal. Occasional high shutter speed under darkness.	10									7	18	
	Shutter remains open	LED indication is normal. Shutter stays open in M and A modes---Slow shutter speed limit, 4 sec., does not operate.	11	3	⑨(White), ⑩(Orange)							41-42	25-26	
		In A mode, shutter stays open with ▽ blinking. (1) LED indication remains the same when AV, film speed, and luminance changing.	11		4 (Blue), ⑦(Blue) 3 (Brown), ⑥(Brown)	2 (AV) 6		4				35, 16, 21, 22, 25, 26, 30, 34 (8-9) (16-17) (24-25) (27-28)		Crack of SPC 1 AV resistor plate
		(2) LED indication remains the same only when changing AV.	11		5 (Brown)									
	Others	In A mode, LED indication and shutter speed operate as slow shutter speed---Over exposure. (1) LEDs and shutter speed remain the same only when film speed changing.	12		8 (Orange) (6-7) (3-4)	1 (SV)						29-30		
		(2) LEDs and shutter speed remain the same when AV and film speed changing.	12		(6-7) (3-5)							32		
		In M mode, shutter does not operate in accordance with speed set by shutter speed dial---LEDs indicate operating shutter speed.	12											Refer to P. 12
		Excessive deflection of LED indication and shutter speed from AV and film speed setting.	12		⑨(Orange) ⑩(Orange)									
Self-timer failure		Shutter release without delay---No self-timer LED blinks.	13	10	11 (Blue)								40	Looseness of self-timer P.C board screw
		Shutter release without delay---Self-timer LED blinks after shutter release.	13									9-10	15-16	
		Shutter release with delay for 10-sec.---No self-timer LED blinks.	13		16 (Gray), 17 (Green)			6				9, 12	16	Short-circuit between anode of LD-17 and GND
		Shutter release impossible with self-timer---Self-timer LED does not blink.	13									13		
		Shutter operates in high speed with self-timer in A mode.	13									8-9	16-17	
		Shutter release with delay for 10-sec., locking AE.	13										40-41	Short-circuit of printed wiring on self-timer P.C board
		Self-timer operates always.	13	10	11 (Blue)									
AE lock failure		AE lock does not operate.	14	14	12 (Yellow)								41	Looseness of self-timer P.C board screw
		AE lock operates always.	14	13	12 (Yellow)									
		AE lock operates only after shutter release---Shutter release is impossible with AE lock SW. locked.	14										41-42	

Symptom	Cause	Page	SW	Lead Wire	VR	SL	R	C	Q	J (Jump lead)	IC-1	IC-2	OTHERS
Flash firing failure (Check in A mode using AEF 200X)	LED indication is normal with flash fully charged. But flash does not fire properly. (1) Flash does not fire. Shutter stays open.	15	SX2	27(Purple), 28(Purple)							20, 22, (20-21), (21-22)		F_1 terminal
	LED indication failure with flash fully charged. (1) "1/60" does not blink. Metered shutter speed LEDs light on. Shutter does not operate as Auto X.	15		30(White) ⑤							1, 41	25	F_1 terminal
	(2) "1/60" does not blink;remains ON. Flash fires with shutter operated as Auto X.	15									43	27	
	(3) "1/60" does not blink. Metered shutter speed LEDs blink. Firing without shutter operated as Auto X.	15									44	26	
	(4) LEDs of metered shutter speed and 1/60 blink, and flash does not fire.	15		25(Black), 26(Black)									Ground is not connected at hot shoe
	(5) "1/60" does not blink. Metered shutter speed LEDs light on. Shutter does not operate as Auto X.—Monitor lamp of flash unit will not light up.	15	(SX2)	27(Purple), 28(Purple)									
	(6) LEDs do not light up at all. Shutter operates as Auto X, and flash fires.	15									(43-44)		
	(7) When pressing AE lock button after 1/60 blinks, metered shutter speed LED blinks. Shutter operates at metered shutter speed, and flash fires.	16										31	
Others	Winding is impossible by motor drive.	16										48	W_2 terminal
	No LEDs light with metering SW. (S_2 or S_1) ON of Motor Drive.	16										47	W_1 terminal
	Shutter is not released by Motor Drive.	17											W_2 terminal

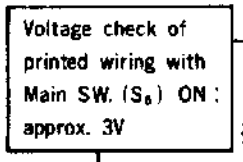

TC
TB
TD
GND
TA
*8
*9
*6
*5
*2
*7
*4
*3
*10
*1

■ Trouble related to electro unit

- ※1～※10 show the check point on the diagram left.
- A-6 or the like on the right shows the position (coordinate) on the schematic wiring diagram (P. 21).

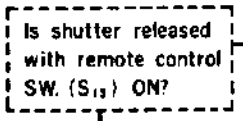
A Shutter release failure

1 No LEDs light, shutter is not released···Release impossible even with Main SW. (S_6) ON→OFF→ON operation.



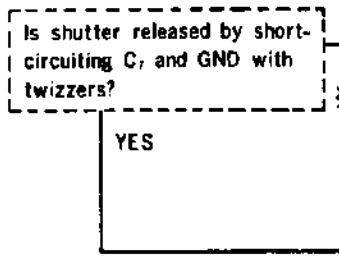
- Main SW.(S_6) contact failure
- Joint part ⓐ; soldering failure
- ℓ_{22} (Red) soldering failure or disconnetion ····· D-3
- J_2 soldering failure ····· E-5
- Joint part ⓒ; soldering failure
- XL soldering failure ····· E-7
- Q_1 soldering failure or element failure ····· F-6
- IC_1㊲ soldering failure
- IC_2㉑, ㉙ soldering failure
- IC_1㊵-㊶ shortcircuit
- IC_2⑪-⑫, ㊸-㊹ shortcircuit
- IC_2㊹-㊺ shortcircuit

2 LEDs remain light, and shutter is not released with release SW. (S_2) ON.·····
(Release impossible even with Main SW. (S_6) ON→OFF→ON operation.



- Reset SW.(S_4) shortcircuit
- ℓ_{21} (Yellow) and GND shortcircuit (catching) ····· E-1
- J_4, J_5 soldering failure ····· C-7
- R_{11} soldering failure or element failure ····· C-7
- Q_4 soldering failure or element failure ····· C-7
- IC_2㊸ soldering failure
- S_2 contact failure
- ℓ_{36} (Grey) soldering failure or disconnection ····· I-5

3 With release SW. (S_2) ON, LEDs go out, but shutter is not released·····
(Release impossible, and LEDs light with Main SW. (S_6) ON→OFF→ON operation.



- SL_1 (R-Mg) failure (Absorptive surface dirty)
- SL_1 lead wires (Green, White) disconnection ····· A-2
- C_7 soldering failure or element failure ····· B-2
- R_7 soldering failure or element failure ····· C-2
- SL_1 lead wire (White) and GND shortcircuit ····· A-2
- ℓ_{32} (Green) disconnection ····· F-7
- Q_3 soldering failure or element failure ····· B-2
- IC_1⑲, ⑪ soldering failure
- IC_2⑮ soldering failure

[4] Shutter is not released with remote control SW. (S_{12}) ON

·····(Release possible with operating button operation.)

- ℓ_{10} (Grey) soldering failure or disconnection ····· D-4
- ℓ_{30} (Black) soldering failure or disconneciton ····· D-4

[5] Shutter is not released even though self-timer LED lights with metering SW. (S_8 or S_1) ON

·····No finder LEDs light.

- J_1 soldering failure ····· F-5
- IC_1 ㉙ soldering failure

[6] Main SW. (S_6) ON makes shortcircuit, resulting in shutter release impossible and no lighting LEDs.

- The joint parts (b) – (c) shortcircuit
- ℓ_{13} (Red) and GND shortcircuit ····· K-5

[7] Main SW. (S_6) and metering SW. (S_8 or S_1) ON make shortcircit, resulting in release impossible and no LEDs lighting.

- R_8 shortcircuit ····· E-5
- C_4 shortcircuit ····· E-5

[8] After shutter releasing with Main SW. (S_6) ON→OFF→ON, release impossible and no LEDs light.

Normal shutter speed when releasing

- Reset SW. (S_4) contact; contact failure
- ℓ_{21} (Yellow) soldering failure or disconnection····· E-1
- IC_2 ⑫ soldering failure

Shutter curtains travel without slit when releasing.

- IC_2 ㊺–㊻ shortcircuit

[9] Shutter is released when winding up.

- Release SW. (S_2) shortcircuit
- ℓ_{10} (Grey) and GND shortcircuit ····· D-4
- SL-1 (R-Mg): defective (attraction failure)
- ℓ_{28} (Grey) and GND shortcircuit ····· I-5
- Remote control terminal shortcircuit

[10] LEDs light and, shutter release is impossible with Main SW. (S_6) OFF.

- Joint parts (a) – (c) shortcircuit

[11] Shutter is released only once, after turning main switch ON (when slower shutter speed LED 1/30-1 sec glows).

- SL-2 (S-Mg) shortcircuit
- C_3 shortcircuit ····· E-5

B Finder indication failure

[1] No LEDs light with metering SW. (S_6 or S_1) ON
·····(Shutter operates normally.)

Voltage check on ℓ_{35} (Brown) soldering area : approx. 1V→0V

NO → ※4
- Metering SW. (S_6 or S_1) contact failure
- ℓ_{35} (Brown) soldering failure or disconnection ····· I-6
- R_9; soldering failure or element failure ····· E-5
- IC_2㊲ soldering failure

YES →
- Joint part ①; soldering failure
- IC_2㊾ soldering failure

[2] No LEDs light with metering SW. (S_6 or S_1) ON
·····Shutter stays open with self-timer LED ON when released.
- IC_2㊵ soldering failure

[3] Only "M" does not light.
- Joint part ②, soldering failure
- IC_2㊿ soldering failure
- IC_2⑲–㊿ shortcircuit

[4] Part of LEDs does not light.

Check soldering failure of IC_2, flexible P.C board···joint part referring to the table below.

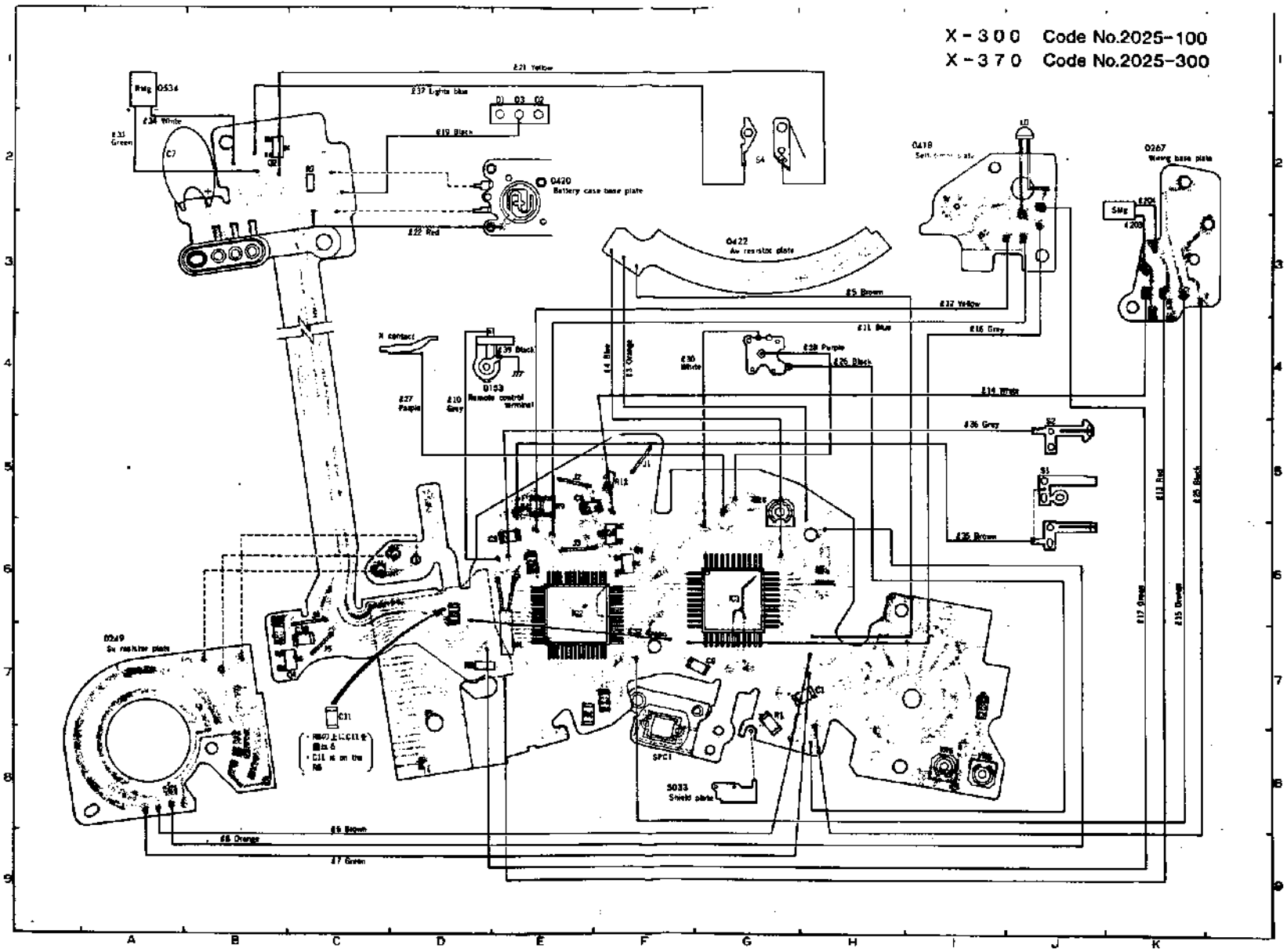
Finder LED	M	A	△	1000	500	250	125	60	30	15	8	4	2	1	▽	B
IC_2 pin No.	㊿	㊶	㊷	㊸	㊹	㊺	㊻	①	②	③	④	⑤	⑥	⑦	⑧	⑨
Joint part No.	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17

[5] Self-timer LED lights with Main SW. (S_6) ON.
- ℓ_{16} (Grey) and GND shortcircuit ····· I-4
- IC_1⑫–⑬ shortcircuit

[6] LEDs light with Main SW. (S_6) ON.
- Metering SW. (S_6 or S_1) and GND shortcircuit
- AE lock SW. (S_{14}) and GND shortcircuit
- ℓ_{12} (Yellow) and GND shortcircuit ····· I-3
- ℓ_{35} (Brown) and GND shortcircuit ····· I-6

[7] LEDs light by Main SW. (S_6) ON with shutter speed dial set at 30~1000 or A.
- IC_2㉟–㊲ shortcircuit

X-300 Code No.2025-100
X-370 Code No.2025-300



[8]When voltage is under specified B.C voltage, shutter release lock does not operate with LEDs ON·····No mode LED blinks.

- $IC_1$③ soldering failure
- IC_2㉓ soldering failure

[9]When decreasing voltage, mode LED remains ON; does not blink

·····No LEDs light when release locked.

- $IC_1$② soldering failure
- IC_2㉔ soldering failure

C Shutter failure

C-1 Shutter curtains travel in high speed, or without slit

[1]LED indication is normal. Shutter curtains travel without slit in M and A modes.

Does shutter fully open when releasing with ℓ_{14} (white) and J_3 short-circuited? ※5

NO →
- ℓ_{13} (Red) soldering failure or disconnection ····· K-5
- ℓ_{14} (White) soldering failure or disconnection ····· I-4
- SL_1 (S-Mg) absorptive surface dirty
- SL_2 (S-Mg) absorptive surface failure.
- The 2nd curtain stop lever spring is off

YES →
- J_3 soldering failure ····· E-6
- Q_3 soldering failure or element failure ····· F-6
- IC_2㊵ soldering failure
- IC_2㉚–㉛ shortcircuit

[2]In A mode shutter operates in high speed with △ blinking.

(1) LED indication remains the same when changing AV, film speed and luminance.

Voltage check on soldering area of ℓ_7 (Green) : 0.9~1.1V ※6

NO →
- SV contact; contact failure
- ℓ_7 (Green) soldering failure or disconnection ····· C-9
- ℓ_7 (Green) and GND shortcircuit ····· C-9
- VR_4 soldering failure or element failure ····· G-5
- IC_1⑮, ㉙, ㉝; soldering failure

YES →

NO →
- $IC_1$⑥, ⑧, soldering failure
- IC_2⑰, ⑲ soldering failure

Is 288mV adjustment possible corresponding to A/D conversion standard voltage adjustment?

NO →
- R_3 soldering failure or element failure ····· I-7
- VR_3 soldering failure or element failure ····· J-8
- IC_1㉕, ㉘ soldering failure

YES →
- C_3 soldering failure ····· F-7
- C_8 soldering failure ····· G-7
- IC_1⑪ soldering failure
- IC_1 short-circuited between pins ④–⑤, ⑤–⑥, ⑥–⑦, ⑦–⑧, ⑬–⑭, ⑭–⑮, ⑮–⑯, ㉓–㉔, ㉙–㉚, ㉜–㉝

(2)LED indication remains the same only when changing AV
·····Check by rotating aperture ring.
→ • ℓ_3 (Orange) soldering failure or disconnection ····· F-4
• MC brush deformed (Printed wiring short-circuited)

(3)LED indication remains the same only when film speed changing
·····Check by rotating film speed ring.
→ • ℓ_4 (Brown) soldering failure or disconnection ····· C-8

(4)LED indication does not change in accordance with luminance
·····Check by changing luminance.
→ • SPC_1 A and K shortcircuit ····· F-8
• IC_1 ㉑–㉒ shortcircuit

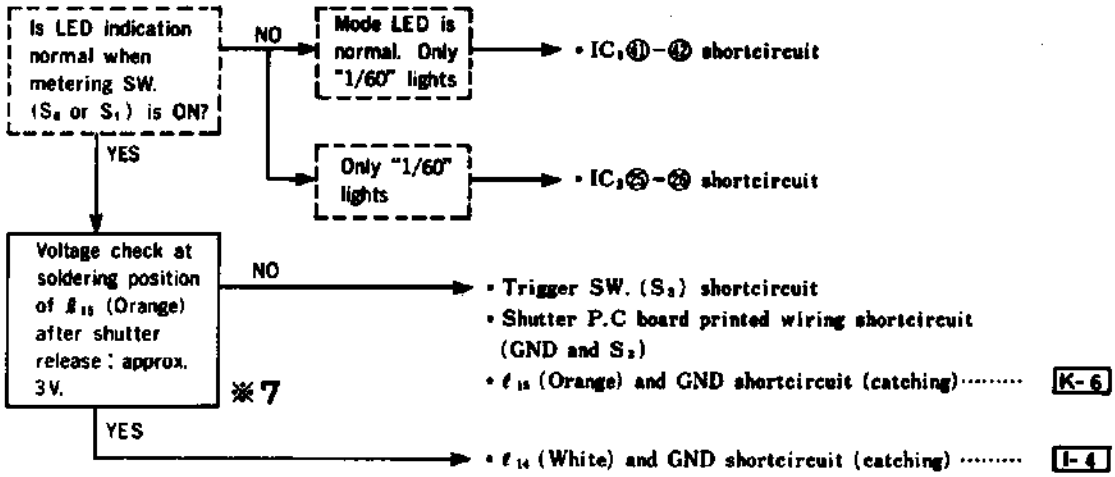
(3)LEDs are normal. In M and A modes shutter curtains travel without slit when set to high speed. ·····Normal at slow speed
→ • Trigger SW. (S_9) contact failure
• ℓ_{18} (Orange) soldering failure or disconnection····· K-6
• ℓ_{18} (Orange) connected to the next printed wiring (IC_2⑬) by mistake ····· K-6

4 In A and M modes, shutter speed remains 1/60 with LEDs "M" and "1/60" lighting.
→ • Looseness of earth plate (2023-4002) screw on TV P.C board.
• GND contact at TV SW.; contact failure

5 LED indication is normal. Occasional high shutter speed under darkness.
→ • $IC_1$⑦ soldering failure
• IC_2⑱ soldering failure

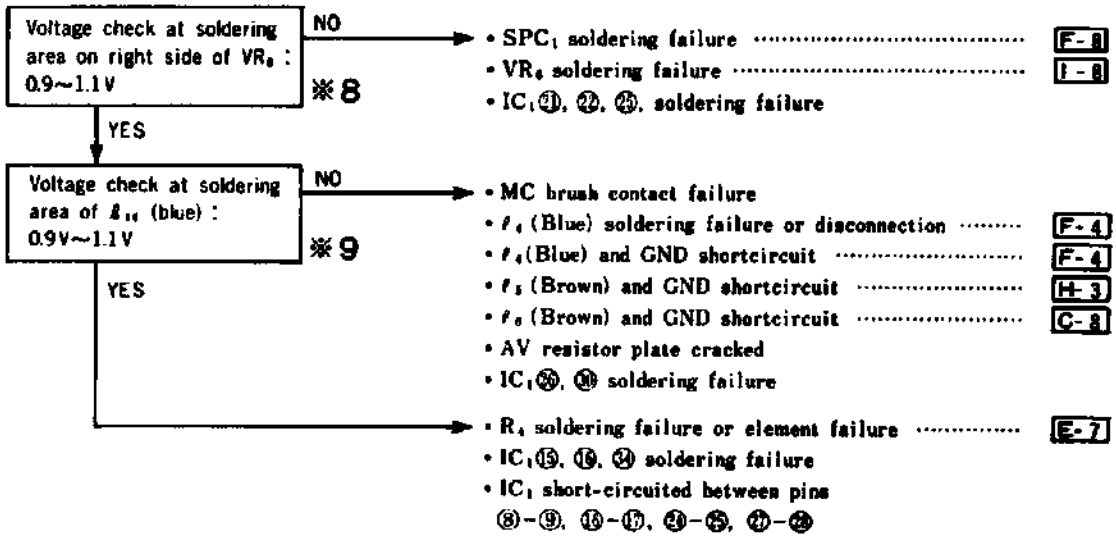
C-2 Shutter remains open

[1] LED indication is normal. Shutter stays open in M and A modes
·····Slow shutter speed limit, 4 sec., does not operate.

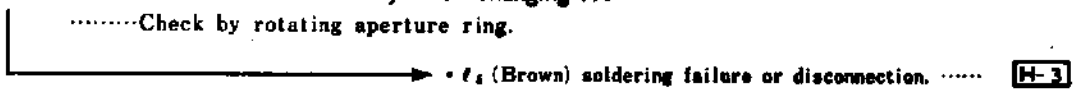

Is LED indication normal when metering SW. (S_a or S_1) is ON?
NO
Mode LED is normal. Only "1/60" lights
• IC_1㊶-㊷ shortcircuit
YES
Only "1/60" lights
• IC_1㉕-㉙ shortcircuit
Voltage check at soldering position of ℓ_{15} (Orange) after shutter release : approx. 3V.
※7
NO
• Trigger SW. (S_3) shortcircuit
• Shutter P.C board printed wiring shortcircuit (GND and S_2)
• ℓ_{15} (Orange) and GND shortcircuit (catching)····· K-6
YES
• ℓ_{14} (White) and GND shortcircuit (catching) ····· I-4

[2] In A mode, shutter stays open with ▽ blinking

(1) LED indication remains the same when AV, film speed, and luminance changing.


Voltage check at soldering area on right side of VR_6 : 0.9~1.1V
NO
※8
• SPC_1 soldering failure ····· F-8
• VR_6 soldering failure ····· I-8
• IC_1㉑, ㉒, ㉓, soldering failure
YES
Voltage check at soldering area of ℓ_{14} (blue) : 0.9V~1.1V
NO
※9
• MC brush contact failure
• ℓ_4 (Blue) soldering failure or disconnection ····· F-4
• ℓ_4 (Blue) and GND shortcircuit ····· F-4
• ℓ_5 (Brown) and GND shortcircuit ····· H-3
• ℓ_6 (Brown) and GND shortcircuit ····· C-8
• AV resistor plate cracked
• IC_1㉘, ㉚ soldering failure
YES
• R_4 soldering failure or element failure ····· E-7
• IC_1⑮, ⑯, ㉔ soldering failure
• IC_1 short-circuited between pins ⑧-⑨, ⑯-⑰, ㉔-㉕, ㉗-㉘

(2) LED indication remains the same only when changing AV
·····Check by rotating aperture ring.



C-3 Others

1 In A mode, LED indication and shutter speed operate as slow shutter speed
·····Over exposure.

(1) LEDs and shutter speed remain the same only when film speed changing
·····Check by turning film-speed ring.

- ℓ_8 (Orange) soldering failure or disconnection
- ℓ_3 (Orange) and ℓ_4 (Blue); soldering area shortcircuit (on AV resistor plate) ····· F-4, G-4
- ℓ_6 (Brown) and ℓ_7 (Green); soldering area shortcircuit (on SV resistor plate) ····· C-8, B-9
- Deformed brush on SV resistor plate (printed wiring shorcircuit)
- IC_1㉙–㉚ shortcircuit

(2) LEDs and shutter speed remain the same when AV and film speed changing.

Over exposure by approx. 3 EV.
- ℓ_3 (Orange) and ℓ_5 (Brown); soldering area shortcircuit (on AV resistor plate) ····· F-4, H-3
- ℓ_6 (Brown) and ℓ_8 (Orange); soldering area shortcircuit (on SV resistor plate) ····· C-8, B-9

Over exposure by approx. 1 EV.
- IC_1⑫ soldering failure

2 In M mode, shutter does not operate in accordance with speed set by shutter speed dial
·····LEDs indicate operating shutter speed.

- Check if brush is deformed on TV SW.
- By turning shutter speed dial, check voltage of printed wiring (T_A~T_D) or voltage IC_2㉝~㊱. Then compare to the table below.

Shutter speed setting and corresponding voltage on printed wiring in normal condition.

Shutter speed and LED indication	Voltage of printed wiring on TV P.C board			
	T_A IC_2㉟	T_B IC_2㉞	T_C IC_2㉝	T_D IC_2㊱
M 1000	3.0	3.0	0	0
M 500	3.0	0	0	0
M 250	3.0	0	3.0	0
M 125	0	0	3.0	0
M 60	0	3.0	3.0	0
M 30	0	3.0	0	0
M 15	0	3.0	0	3.0
M 8	3.0	3.0	0	3.0
M 4	3.0	0	0	3.0
M 2	0	0	0	3.0
M 1	0	0	3.0	3.0
B	0	3.0	3.0	3.0
A	3.0	3.0	3.0	0

- By brush contact failure on TV SW, the voltage becomes 3.0 V resulting in different shutter speed and LED indication.
- Replace flexible P.C board set with new one, when shutter is failure with voltage within the range.

3 Excessive deflection of LED indication and shutter speed from AV and film speed setting.

- ℓ_3 (Orange) and GND shortcircuit ····· F-4
- ℓ_8 (Orange) and GND shortcircuit ····· B-9

D Self-timer failure

[1] Shutter release without delay

·····No self-timer LED blinks.

- Self-timer SW. (S_{10}) contact failure
- ℓ_{11} (Blue) soldering failure or disconnection ····· H-4
- Looseness of self-timer plate screw
- IC_2⑲ soldering failure

[2] Shutter release without delay

·····Self-timer LED blinks after shutter release.

- $IC_1$⑨–⑩ shortcircuit
- IC_2⑮–⑯ shortcircuit

[3] Shutter release with delay for 10-sec

·····No self-timer LED blinks.

Voltage check at soldering area of ℓ_{12} (Green) : approx. 3.0V ※10

NO →
- R_8 soldering failure or element failure ····· D-7
- Shortcircuit between self-timer LED (anode) and GND

YES →
- ℓ_{14} (Grey) soldering failure or disconnection ····· I-4
- ℓ_{12} (Green) soldering failure or disconnection ····· K-6
- LD_{12} (self-timer LED) failure
- $IC_1$⑨, ⑫ soldering failure
- IC_2⑯ soldering failure

[4] Shutter release impossible with self-timer

·····Self-timer LED does not blink.

- IC_1⑬ soldering failure

[5] Shutter operates in high speed with self-timer in A mode.

- $IC_1$⑧–⑨ shortcircuit
- IC_2⑯–⑰ shortcircuit

[6] Shutter release with delay for 10-sec., locking AE.

- Self-timer plate printed wiring shortcircuit
- IC_3⑩–⑪ shortcircuit

[7] Self-timer operates always.

- Self-timer SW. (S_{10}) deformation.
  (Shortcircuit between GND and printed wiring)
- ℓ_{11} (Blue) and GND shortcircuit (catching)····· H-4

E AE lock failure

[1] AE lock does not operate.

- AE lock SW. (S_{14}) contact failure
- ℓ_{12} (Blue) soldering failure or disconnection ····· 1-3
- Looseness of self-timer plate screw
- IC_2⑪; soldering failure

[2] AE lock operates always.

- AE lock SW. (S_{14}) deformation
  (Shortcircuit between GND and printed wiring)
- ℓ_{12} (Yellow) and GND shortcircuit (catching) ····· 1-3

[3] AE lock operates only after shutter release

·····Shutter release is impossible with AE lock SW. locked.

- IC_2⑪–⑫ shortcircuit

F Flash firing failure. (Check in A mode using AEF 200X)

[1] LED indication is normal with flash fully charged. But flash does not fire properly.

(1) Flash does not fire. Shutter stays open.

→
- X contact (SX_2); contact failure
- F_1 terminal contact failure
- ℓ_{27} (Purple) soldering failure or disconnection ····· D-4
- ℓ_{28} (Purple) soldering failure or disconnection ····· H-4

[2] LED indication failure with flash fully charged.

(1) "1/60" does not blink. Metered shutter speed LEDs light on. Shutter does not operate as Auto X.

→
- F_2 terminal contact failure
- ℓ_{30} (White) soldering failure or disconnection ····· F-4
- ℓ_{30} (White) and GND shortcircuit (catching) ····· F-4
- $IC_1$①, ㊶ soldering failure
- IC_2㉕ soldering failure

(2) "1/60" does not blink; remains ON. Flash fires with shutter operated as Auto X.

→
- IC_1㊸ soldering failure
- IC_2㉗ soldering failure

(3) "1/60" does not blink. Metered shutter speed LEDs blink. Firing without shutter operated as Auto X.

→
- IC_1㊸ soldering failure
- IC_2㉖ soldering failure

(4) LEDs of metered shutter speed and 1/60 blink, and flash does not fire.

→
- Ground is not connected at hot shoe
- ℓ_{25} (Black) soldering failure or disconnection ····· K-5
- ℓ_{26} (Black) soldering failure or disconnection ····· H-4

(5) "1/60" does not blink. Metered shutter speed LEDs light on. Shutter does not operate as Auto X. ·····Monitor lamp of flash unit will not light up.)

→
- X contact (Sx_2) shortcircuit
- ℓ_{27} (Pink) and GND shortcircuit (catching) ····· D-4
- ℓ_{28} (Pink) and GND shortcircuit (catching) ····· H-4

(6) LEDs do not light up at all. Shutter operates as Auto X, and flash fires.

→
- IC_1㊸–㊹ shortcircuit

(7) When pressing AE lock button after 1/60 blinks, metered shutter speed LED blinks. Shutter operates at metered shutter speed, and flash fires.

→
- IC_2㉛ soldering failure

[G] Failure with Motor Drive using

[1] Winding is impossible by motor drive.

- W_3 contact failure
- W_3 riveting failure or soldeirng failure
- IC_3 ⑱ soldering failure

[2] No LEDs light with metering SW. ON of Motor Drive.

- W_1 contact failure
- W_1 riveting failure or soldering failure
- IC_2 ⑰ soldering failure

[3] Shutter is not released by Motor Drive.

- W_2 contact failure
- W_2 riveting failure or soldering failure

■ Trouble related mechanism

(Winding and shutter releasing are impossible).

A. Returning winding lever to original position after winding completion, shutter curtains return to position of shutter released.

- Under-charge→Adjust the shutter charge following 2024 Service Manual Repair Guide P. 16.
- Looseness of winding shaft riveting (0338)→Replace winding shaft.

B. Charge operation plate set does not return at winding completed.

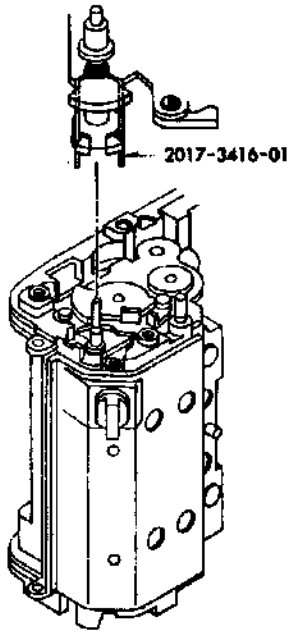
- Winding operation lever does not work properly. ..... Clean the winding operation lever and the holder. / Adjust the spring (3416) shape or replace it. ..... Fig. 1
- (Stiff / Disconnection of SP. / Deformation of SP.)

C. Others

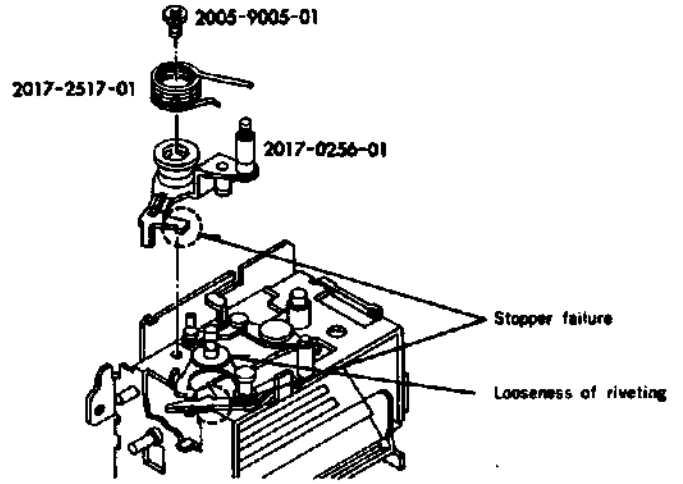
- Charge lever bent. → Adjust or replace.
- Disconnection of charge lever from charge roller. → Adjust or replace the charge lever and charge roller.
- Disengagement of mirror holder rivet. → Replace the mirror holder. (Adjust and check the mirror angle)
- Foreign particle on the mirror holder.
- MP return lever set (0256) stopper failure.
- Looseness of MP return lever riveting shaft.

..... Fig. 2

■Fig. 1

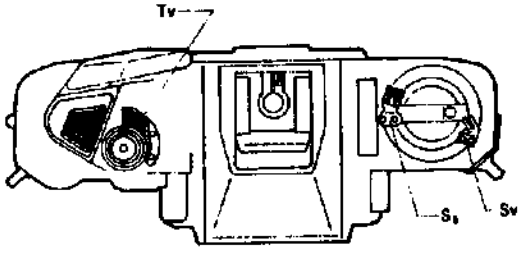


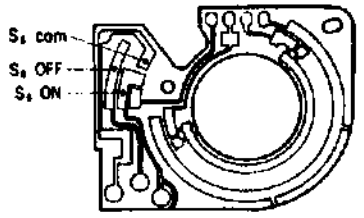
■Fig. 2

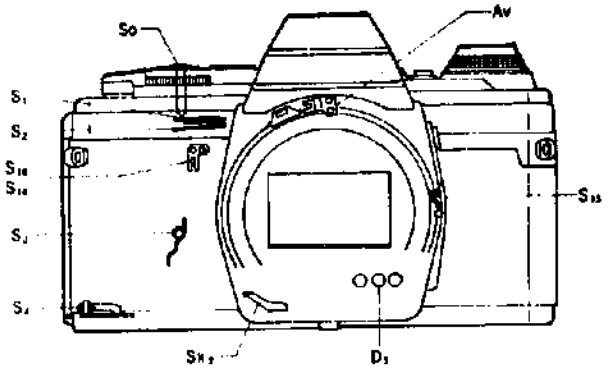


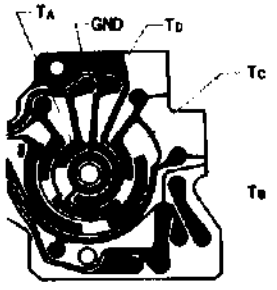
■ Operation of switches

Mark	Name	Function	Condition of operation
S_0	Touch switch	Setting metering and calculating circuit to ON, lighting finder LEDs.	ON by touching operating button.
S_1	Metering switch	The same as S_0.	ON by depressing operating button.
S_2	Release switch	Starting of circuits operating.	
S_3	Trigger switch	Counting start of exposure time with OFF.	OFF right after shutter operation start.
S_4	Reset switch	• Prevention against error during winding. • Reset of circuit. • Control of motor drive.	OFF with winding completed. ON with preset mech. returning after 2nd curtain travelled.
S_6	Main switch	• ON/OFF of circuit power source. • Power supplying.	Operating of main switch lever.
S_{10}	Self-timer switch	Setting circuit components to self-timer mode.	ON by pulling up self-timer lever.
S_{13}	Remote control switch	The same as S_2.	
S_{14}	AE lock switch	• Holding of exposure value and indication. • Slow synchronization using exclusive flash.	ON by pushing the self-timer lever down.
Sx_2	X contact	Firing of flash.	ON with 1st curtain travelled completely. OFF with 2nd curtain travelled completely.
T_A / T_D	TV switch	• Circuit changing of A, M, B, mode. • LED light changing of A, M, B mode.	By turning shutter speed dial.

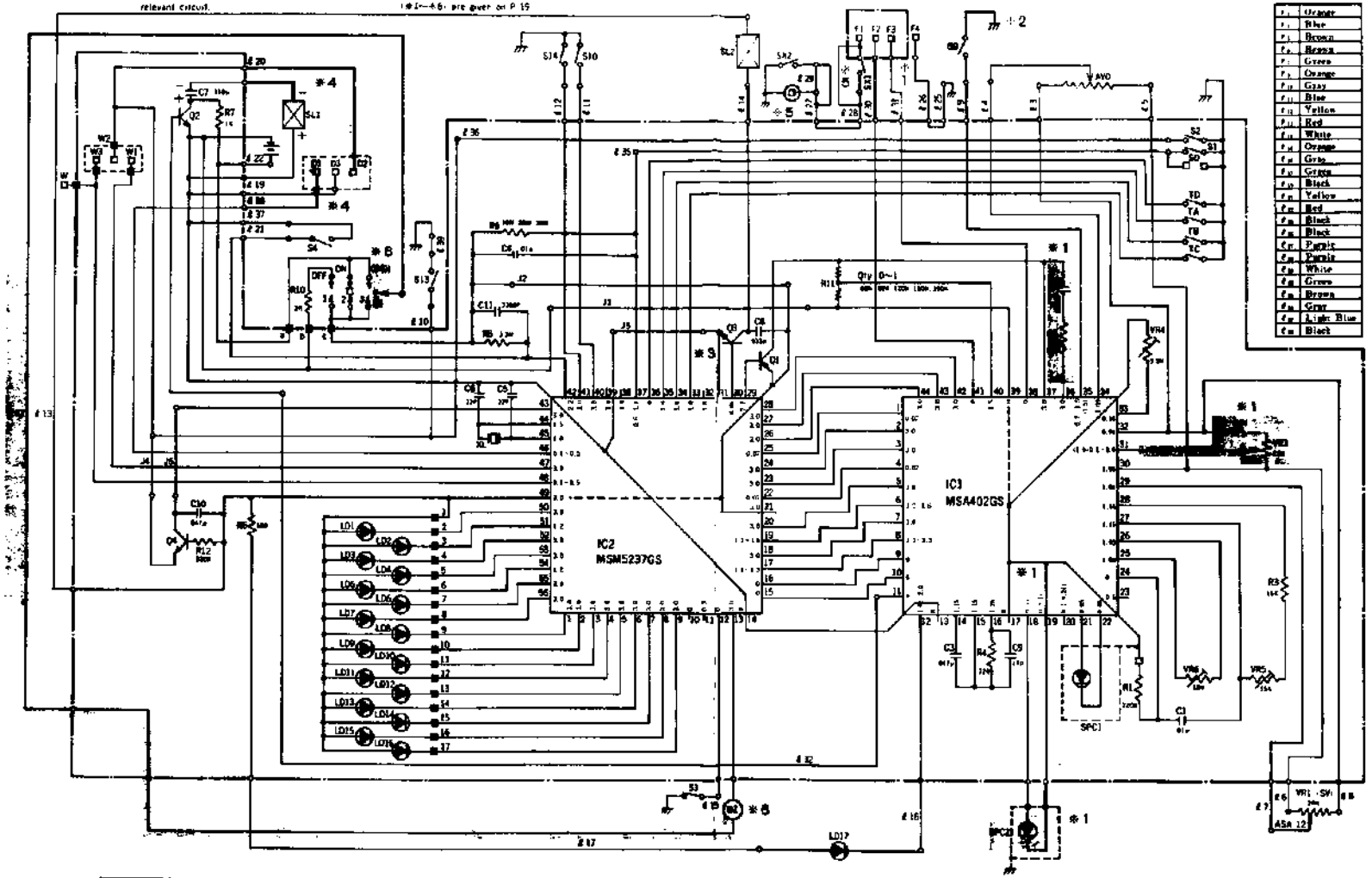






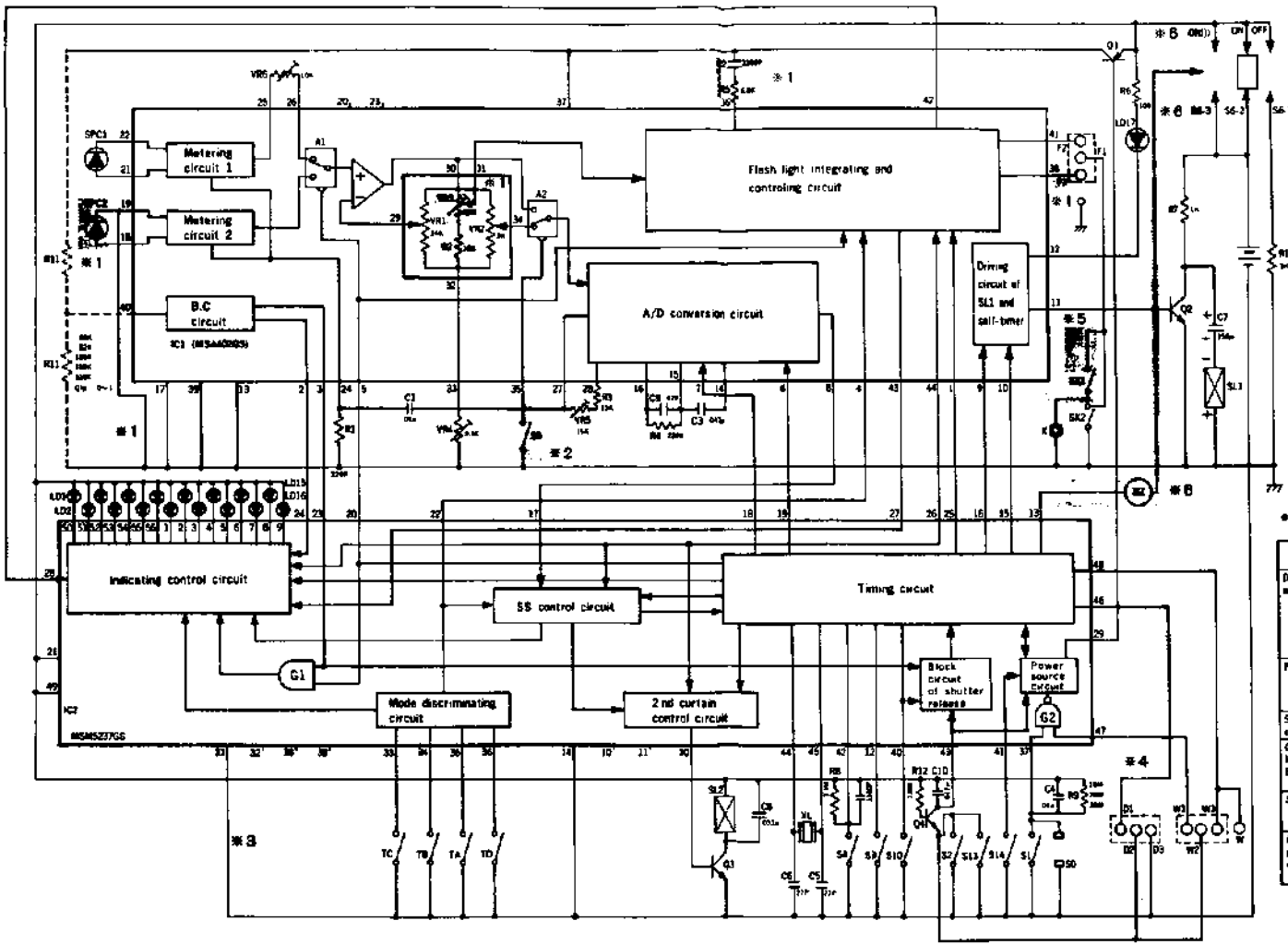


X-370 Substantial Circuit Diagram



■ X-300 X-370 Circuit Diagram

: Circuit provided with ▭ shows the exclusive circuit for X-500 -570 X-300 370 does not employ relevant circuit



*** Differences from X-500/-570 circuit**

Exceptional specifications	Modification of circuit	Circuit diagram
Direct multiflash metering	• Discontinuity of electrical components: SPC2, VR3, R5, C2, F3 terminal, F31. • Disconnection of IC1 pin ⑩-㉒, ㉓, ㉔, ㉕, ㉖.	※1
Preview button	• Discontinuity of electrical components: S8, r8. • Disconnection of IC1-㉗	※2
Slow-shutter sync	• IC2-㉑ and GND are connected.	※3
Connection with Multi-Function Back	• Discontinuity of electrical components: D1, D2, r14, r32. • Disconnection of IC2-㉙	※4
Sync terminal	• Discontinuity of electrical components: SX1, Sync terminal, F29.	※5
Audible piezoelectric warning	• Discontinuity of electrical components: F34, BZ. • Disconnection of IC2-㉚	※6

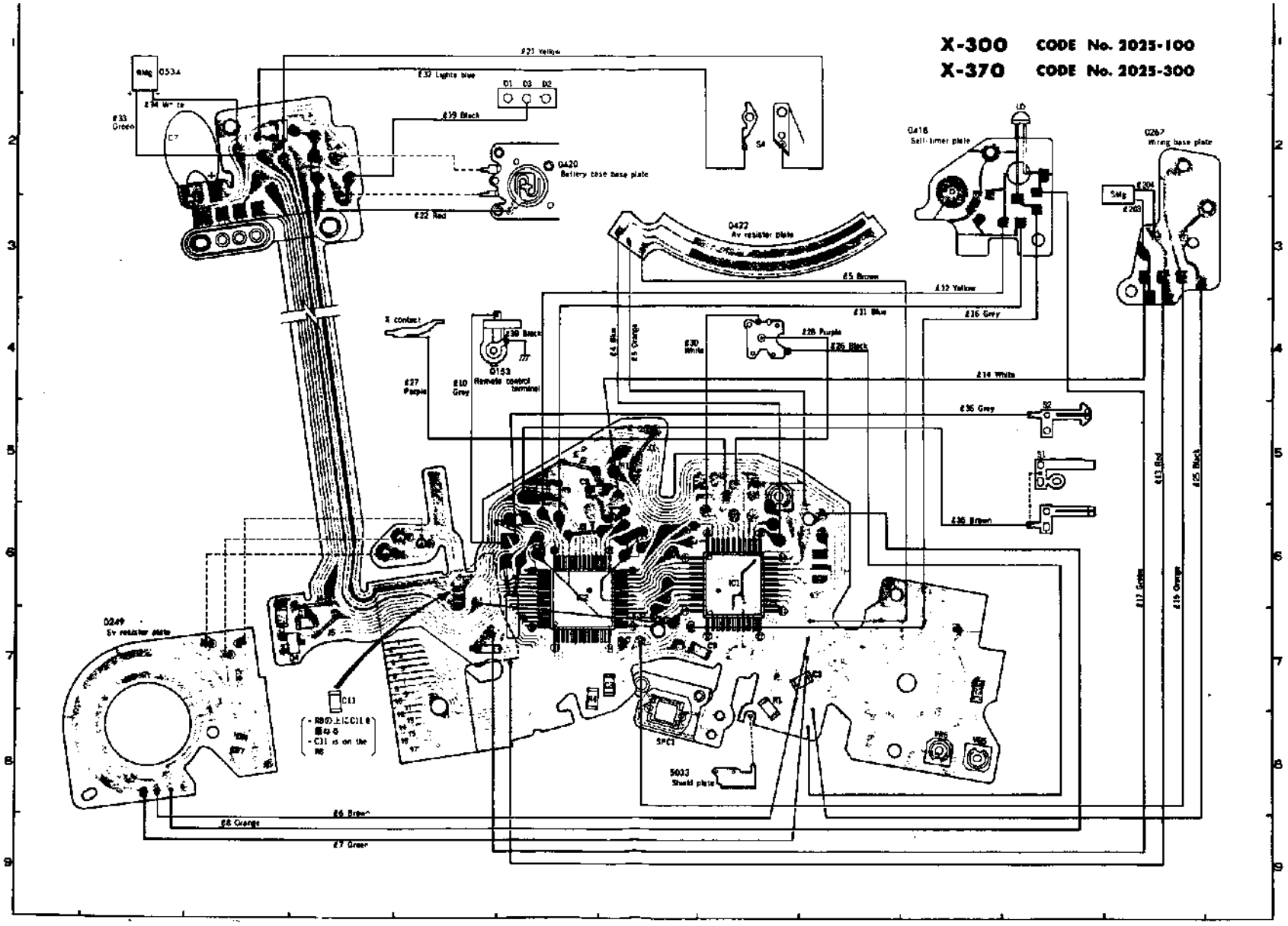
Symbol	Name	Symbol	Name	Symbol	Name
S_1	Touch SW	S_{8-3}	Mode SW (X-500)	S_{11}	Σ contact
S_2	Metering SW	S_9	PV SW	TA	
S_3	Release SW	S_{10}	Self-timer SW	/	TV SW
S_4	Trigger SW	S_{11}	Memories SW	TD	
S_5	Reset SW	S_{12}	AE lock SW		
S_6	Main SW (OFF)	S_{13}	Cancel SW against electric shock		

Name	Function	Name	Function	Name	Function
IC_1	Metering, calculation, A/D conversion, flash control, and others	SL_1	Shutter magnet	R_{17}	Touch SW adjustment
IC_2	Timing control, SS control, self-timer control	VR_1	SV setting	R_{18}	B.C lock voltage adjustment
		VR_2	AV setting	Q_1	Power source driving
		VR_3	Flash level setting	Q_2	
		VR_4	Main V adjustment	Q_3	
		VR_5	Main V adjustment	Q_4	
		VR_6	200mV adjustment	Q_5	SL1 driving

Name	Function	Name	Function	Name	Function
Q_6	Prevention against error using MD1	C_{14}	Prevention against touch SW noise	C_{19}	Prevention against counter-electromotive force of SL1
Q_7	Power source response	C_{15}	XL oscillation	C_{20}	Prevention against IC1 oscillation
Q_8	Expansion	C_{16}	XL oscillation		
C_1	Double integrating	C_{17}	SL1 driving		

Name	Function	Name	Function	Name	Function	Name	Function
C_{21}	Prevention against release signal chattering	C_{24}	Prevention against error using x-tube	SPC2	Flash light metering	F_{31}	Firing of flash
C_{22}	Prevention against error using noise	D_1	IC oscillator	W1	MD1 metering signal	F_{32}	Flash ready signal
D_1		D_2		W2	MD2 release signal	F_{33}	Flash control
D_2		X_1		W3	MD3 warning signal	W	X-tube connect
				D_1	Data output signal		
				D_2	Release signal		

X-300 **CODE No. 2025-100**
X-370 **CODE No. 2025-300**



IC pin voltages

Measuring conditions: ● Supply voltage···3V
● A mode···Measure with no lens attached in the room around ASA 100.
● M mode···Only difference from A mode is given in the table. (shutter speed is at 1/1000 sec.)

Pin No.	Winding completed metering (S_6 ON)	Shutter released metering (S_6 ON)
IC_1 1	0.07	0.07
2	3.0	3.0
3	3.0	3.0
4	A mode 0.07 M mode 0.8	A mode 0.07 M mode 0.8
5	3.0	3.0
6	1.2~1.6	1.2~1.6
7	3.0	3.0
8	1.1~1.3	1.1~1.3
9	0	0
10	0	0
11	0	0
12	1.6~2.0	1.6~2.0
13	0	0
14	1.15	1.15
15	1.15	1.15

Pin No.	Winding completed metering (S_6 ON)	Shutter released metering (S_6 ON)
IC_1 16	1.26	1.26
17	0	0
18	0.05	0.05
19	0	0
20	0.7	0.7
21	0.05	0.05
22	0.06	0.06
23	0.5	0.5
24	0	0
25	1.08	1.08
26	1.03	1.03
27	1.15	1.15
28	1.44	1.44
29	1.04	1.04
30	1.08	1.08

Pin No.	Winding completed metering (S_6 ON)	Shutter released metering (S_6 ON)
IC_1 31	0.1~0.6	0.1~0.6
32	0.94	0.94
33	0.16	0.16
34	1.08	1.08
35	0.7~1.5	0.7~1.5
36	3.0	3.0
37	3.0	3.0
38	0	0
39	0	0
40	1.5	1.5
41	0	0
42	3.0	3.0
43	3.0	3.0
44	3.0	3.0

● There is possibility having difference voltage at the state of S_6 ON and S_6 OFF(metering hold).
● Above values are obtained by actual measuring, pin voltages vary slightly according to the measured camera.

Pin No.	Winding completed metering (S_6 ON)	Shutter released metering (S_6 ON)
IC_2 1	3.0	3.0
2	3.0	3.0
3	3.0	3.0
4	3.0	3.0
5	3.0	3.0
6	3.0	3.0
7	3.0	3.0
8	3.0	3.0
9	3.0	3.0
10	0	0
11	3.0	3.0
12	0	3.0
13	3.0	3.0
14	0	0
15	0	0
16	0	0
17	1.1~1.3	1.1~1.3
18	3.0	3.0
19	1.2~1.6	1.2~1.6

Pin No.	Winding completed metering (S_6 ON)	Shutter released metering (S_6 ON)
IC_2 20	3.0	3.0
21	3.0	3.0
22	A mode 0.07 M mode 0.8	A mode 0.07 M mode 0.8
23	3.0	3.0
24	3.0	3.0
25	0.07	0.07
26	3.0	3.0
27	3.0	3.0
28	3.0	3.0
29	2.2	2.2
30	0.06	0.06
31	0	0
32	3.0	3.0
33	A mode 3.0 M mode 0	A mode 3.0 M mode 0
34	3.0	3.0
35	3.0	3.0
36	0	0
37	0.6~1.8	0.6~1.8
38	3.0	3.0

Pin No.	Winding completed metering (S_6 ON)	Shutter released metering (S_6 ON)
IC_2 39	3.0	3.0
40	3.0	3.0
41	3.0	3.0
42	2.2	0
43	3.0	3.0
44	1.5	1.5
45	1.0	1.0
46	0.1~0.5	0.1~0.5
47	3.0	3.0
48	0.1~0.5	0
49	3.0	3.0
50	A mode 3.0 M mode 1.2	A mode 3.0 M mode 1.2
51	A mode 1.2 M mode 3.0	A mode 1.2 M mode 3.0
52	3.0	3.0
53	A mode 3.0 M mode F	A mode 3.0 M mode F
54	1.2	1.2
55	3.0	3.0
56	3.0	3.0